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ABSTRACT

These proceedings contain 11 presentations: "The Impact of Multiskilled Practice upon Medical Laboratory Personnel's Job Satisfaction" (Akroyd et al.); "Health Occupations Students of America--A Profile" (Sandiford); "Competencies for Teaching and Need for Update: Perceptions of Secondary Health Occupations Teachers" (Southern et al.); "The Relationship between Cognitive Style in Mathematics and Drug Dosage Calculation Ability of Baccalaureate Nursing Students" (Bath, Blais); "Florida Certified Nursing Assistant Workforce Study" (McCulloch); "Membership Responses to National Health Occupations Education Certification Standards and Philosophy" (Richards et al.); "Health Occupations Education Teacher Educators: Who Are They?" (Gable, Snell); "Factors Freshmen Radiography Students Consider Important in Making Career and Program Decisions: Implications for Recruitment and Marketing Strategies" (Akroyd, Lavin); "Factors Affecting University-Based AIDS Education Efforts and Outcomes" (Boyd); "Minority Student Recruitment and Retention Strategies Used by Entry Level Physical Therapy Education Programs" (Haskins); and "Nursing and Allied Health Technical Education in Europe" (Junge). (NLA)

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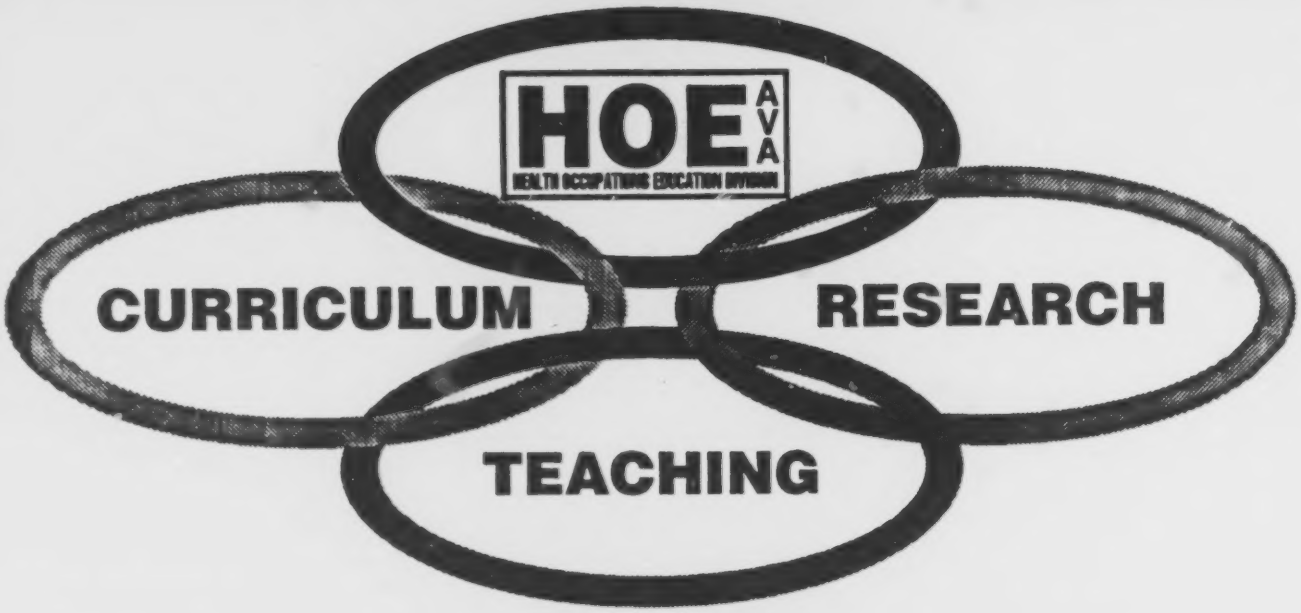

4TH BIENNIAL
NATIONAL HEALTH OCCUPATIONS EDUCATION RESEARCH CONFERENCE

October 9 - 11, 1991

Florida International University
Broward Programs
University Tower
220 S.E. 2nd Avenue
Ft. Lauderdale, Florida 33301

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Fourth National
Health Occupations Education
Research Conference
Proceedings

Edited
by

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In Memory of

Catherine Bickle Junge
1926 - 1991

4th Biennial
National Health Occupations Education Research Conference

Location: **Florida International University**
Broward Programs
University Tower
220 S.E. 2nd Avenue
Ft. Lauderdale, FL 33301

Dates:October 9-11, 1991

Wednesday - October 9, 1991

2:00 - 5:00	Registration - Riverside Hotel
5:30 - 6:30	Welcome - Renewal hour
6:30 - 9:30	Banquet and Opening Session

Topic: Welcome to Florida and
Florida International University

Conference overview

Thursday - October 10, 1991

7:00 - 8:00	***Continental Breakfast***	***Riverside Hotel***
8:30 - 9:10	Presenter: Duane Akroyd	University Tower
Topic:	"The Impact of Multiskilled Practice Upon Medical Laboratory Personnel's Job Satisfaction"	Room 210
9:10 - 9:20	Reaction: Catherine Junge	
9:20 - 10:00	Presenter: Janice R. Sandiford	
Topic:	"Health Occupations Students of America: A Profile"	
10:00-10:10	Reaction: Joyce Borndahl	
10:10-10:40	***Break***	
10:40-11:20	Presenter: Judy Carol Southern	
Topic:	"Competencies for Teaching and Need for Update: Perceptions of Secondary Health Occupations Teachers"	
11:20 -11:30	Reaction: Margaret Snell	
11:30-1:30	***Lunch on your own***	

1:30- 2:10	Presenter:	John Bath and Kathleen Blais
Topic:		"The Relationship between Cognitive Style in Mathemetics and Drug Dosage Calculation Ability of Baccalaureate Nursing Students"
2:10-2:20	Reaction:	Karen Gable
2:20-3:00	Presenter:	Etta McCulloch
Topic:		"Florida Certified Nursing Assistant Workforce Study"
3:00 - 3:10	Reaction:	Beverly Richards
3:10 - 3:50	Presenter:	Beverly Richards & Susan Moore
Topic:		"Membership Responses to National Health Occupations Education Certification Standards and Philosophy".
3:50 - 4:00	Reaction:	Kathleen Blais

Enjoy your evening in Ft. Lauderdale

Friday - October 10, 1991

7:00 - 8:00	***Continental Breakfast***		***Riverside Hotel***
8:30 - 9:10	Presenter:	Margaret Snell and Karen Gable	University Tower Room 414
Topic:		"Health Occupatons Education Teacher Educators: Who Are They?"	
9:10 -9:20	Reaction:	Susan Moore	
9:20-10:00	Presenter:	Duane Akroyd	
Topic:		"Factors Freshmen Radiography Students Consider Important in Making Career and Program Decisions: Implications for Recruitment and Marketing Strategies"	
10:00 - 10:10	Reaction:	Janice Sandiford	
10:10-10:40	***Break***		
10:40 - 11:20	Presenter:	Therese Boyd	
Topic:		"Factors Affecting University-based AIDS Education Efforts and Outcomes"	
11:20-11:30	Reaction:	Awilda Haskins	

11:30-1:30	*Lunch on your own*
1:30- 2:10	Presenter: Awilda Haskins
Topic:	"Minority Student Recruitment and Retention Strategies used by Entry Level Physical Therapy Education Programs"
2:10-2:20	Reaction: Larry Hudson
2:20-3:00	Presenter: Catherine Junge
Topic:	"Nursing and Allied Health Technical Education in Europe"
3:30 - 3:10	Reaction: Therese Boyd
3:10 - 3:30	Conference Wrap-up Evaluation & Closing Remarks

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HEALTH OCCUPATIONS EDUCATION
FOURTH NATIONAL RESEARCH CONFERENCE
October 9 - 11, 1991

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THE IMPACT OF MULTISKILLED PRACTICE UPON MEDICAL LABARATORY PERSONNEL'S JOB SATISFACTION

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THE IMPACT OF MULTISKILLED PRACTICE UPON MEDICAL LABORATORY PERSONNEL'S JOB SATISFACTION

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Janice Hall

Abstract: Of 207 responding ASCP-registered Medical Technologists (MTs) and Medical Laboratory Technicians (MLTs) in hospitals with 200 beds or less in a five-state region, 25% performed skills other than clinical laboratory science on a routine basis with more of the MLTs (37%) than MTs (17%) being multiskilled. The most frequently listed added-skills were electrocardiography and arterial blood gases. Based on responses to the Job Descriptive Index, work performed contributed significantly to overall job satisfaction for all four groups (multiskilled MLTs, single-skilled MLTs, multiskilled MTs, and single-skilled MTs) but the least for the multiskilled MLTs. The results support the conclusion that when redesigning jobs in clinical laboratory science, jobs should be enriched by adding tasks of increased complexity and challenge and not just enlarged by the addition of lower or parallel level skills.

Multiskilled Health Practitioners

Health care personnel with skills from multiple areas have been used in rural hospitals, clinics, and physicians' offices for over three decades to deliver care more cost-effectively and to accommodate personnel shortages (Bamberg, Blayney, Vaughan, & Wilson, 1989). Such workers have been described

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by a variety of adjectives including multicompetent, multiskilled, and cross-trained, with the most recent terminology being multiskilled health practitioners (MSHPs) (Bamberg, 1991). The use of MSHPs has more recently spread to medium and large sized hospitals as well as additional outpatient settings such as urgent care centers, community health centers, and mobile imaging units due to increased cost constraints and crisis-level shortages of personnel in some professions (Vaughan, Bamberg, Blayney, & Wilson, 1989).

A national survey conducted in 1988 by the National Multiskilled Health Practitioner Clearinghouse documented the use of MSHPs in 137 hospitals in the U.S. and the preparation of MSHPs through 70 formal programs in educational institutions. Self-reported information from the responding hospitals indicated that, overall, the use of MSHPs provided cost savings and increased service availability for the institutions as well as increased job satisfaction for the multiskilled employees without negatively affecting quality of care. The hospitals reported 195 unique skill combinations with the more common MSHPs being (a) respiratory therapy personnel performing electrocardiography and/or electroencephalography, (b) radiologic technologists doing ultrasound or mammography, (c) medical laboratory personnel performing high-frequency radiographs, (d) registered nurses doing respiratory therapy, and (e) support personnel performing multiple business office functions. Academic programs preparing MSHPs predominantly offered high-level skills training, the most common combining two or more radiologic science areas (i.e., radiography, ultrasound, nuclear medicine, computed tomography, magnetic resonance imaging) and providing expanded skills training in medical laboratory technology, radiography, and/or administration to medical assistants. The majority (71%) of the academic programs provided graduates with either single or dual certification eligibility (Bamberg, Blayney, Vaughan, & Wilson, 1989; Vaughan, Bamberg, Blayney, & Wilson,1989).

Several surveys of local communities have been conducted concerning the need for MSHPs with input from employers and employees in hospitals, community health organizations, health maintenance organizations, and physician offices. These surveys have found the use and need for MSHPs with the following skill combinations: (a) radiography and ultrasound, (b) medical technology and cytotechnology or histotechnology, (c) respiratory therapy and electrocardiography (Low & Weisbord, 1987), (d) radiography

and phlebotomy, (e) nursing and dietetics, (f) nursing and respiratory therapy (Rudmann, et al., 1989), (g) medical laboratory technology and radiography, (h) physical therapy and occupational therapy, (i) physical therapy and respiratory therapy (Beachey, 1988), (j) medical assisting and transcription, (k) surgical technology and ultrasound, (l) nursing and vascular technology (Hernandez & Samuels, 1990), (m) medical records administration and discharge planning, (n) medical laboratory technology and respiratory therapy (Brandt & Rzonca, 1989), (o) cardio-pulmonary technology and respiratory therapy (Bamberg & Blayney, 1984), and (p) physician assisting and perfusion technology (Roush, Fasser, DeBell, & Nathanson, 1986). None of these surveys investigated job satisfaction of the MSHPs.

Job Design and Satisfaction

The levels of satisfaction persons derive from their work has been investigated by many researchers and theorists. Work or job satisfaction is not easily operationalized. A job is not a single entity but a complex interrelationship of dimensions. Locke (1969) categorized a job into the dimensions of work, pay, promotion, recognition, benefits, and working conditions. The classification of job dimensions with which a worker may be satisfied or unsatisfied has also varied. Herzberg (1966) developed a two-factor theory in which he postulated that satisfaction with work results to the extent that achievement, recognition for achievement, advancement, possibility for growth, interesting and challenging work, and responsibility are present; while the absence or lessening of supervision, relations with co-workers, status, working conditions, security, and defined policies result in job dissatisfaction. Hackman and Oldman (1975, 1980) identified five aspects of work which can contribute to job satisfaction by the degree a job: (a) requires a variety of different skills (skill variety), (b) requires completion of a whole or identifiable piece of work (task identity), (c) has a substantial impact on the lives of other people (task significance), (d) provides substantial freedom, independence, and discretion in work scheduling, determining procedures, and making decisions (autonomy), and (e) results in the individual obtaining direct and clear information about the effectiveness of his or her performance (feedback).

Several researchers have investigated the job satisfaction of single-skilled clinical laboratory

professionals. An early study by French and Rezler (1976) found medical technologists least satisfied with their promotional opportunities and pay. A study of Utah clinical laboratory workers found the least satisfaction also with advancement opportunities as well as with opportunities for continuing education at employer expense and participation in decision making (Marty, 1977). Rogers (1983) found job dissatisfaction among 48% of 58 randomly-selected medical technologists working in hospital laboratories in upper South Carolina with half of the dissatisfied personnel reporting high stress levels in their jobs. A 1985 study of medical technologists in Illinois found that personnel employed in supervisory and education-related positions were more satisfied with 14 of 17 job satisfaction indicators than staff personnel (Spencer & Halinski, 1990). The greatest differences were self-expression allowed in job (i.e., creativity, development of new procedures, involvement in decision-making) and preparation for advancement.

A survey of medical technologists in Missouri, Iowa, Nebraska, and Kansas (n = 319) found that individuals who valued benevolence and conformity tended to be more satisfied with their work in clinical laboratory science than those who valued independence and recognition (Oliver, 1978). Other studies of clinical laboratory personnel have found that work structure (task accomplishment and social interaction) and organizational climates (clarity of formalization, chain-of-command, job scope and duties) were related to employee job satisfaction (Matteson, Ivancevich, & McMahon, 1977; and McMahon, Ivancevich, & Matteson, 1977). A survey of Irwin (1983) of graduates of New Jersey's schools of clinical laboratory science found over half (57%) of the 115 respondents did not intend to be practicing in the profession in five years due to esteem and self-actualization needs not being met by their jobs.

Numerous studies have been conducted investigating the job satisfaction of other allied health professionals including pharmacy technicians, physical therapists, registered dietitians, physician assistants, and dental technicians (Brutvan, 1985; Cortese, Greenberger, Schneider, & Bourret, 1987; Sanford, Facchinetti, & Broadhead, 1984) as well as nurses (Peterson, 1983), with varying results. Several studies have used the Job Descriptive Index (JDI) which measures satisfaction with five job aspects (work, coworkers, pay, supervision, and promotional opportunities). One such study surveyed pharmacy technicians employed in North Carolina and found the 313 respondents to be most satisfied with their

supervisors and coworkers, least satisfied with their pay and promotional opportunities, and neutral about their work (Coburn, Gagnon, & Eckel, 1980). Another study conducted of the medical technologist, physical therapist, and dietitian graduates of Ohio State University, using the JDI, found significant differences in job satisfaction among the professions. Of the four professional groups surveyed, the physical therapists were the most satisfied with their pay and work and the medical technologists were least satisfied than the other three groups on four (work, pay, promotional opportunities, and coworkers) of the five measured job aspects (Broski & Cook, 1978; Broski, Manuselis, & Noga, 1982).

Some research indicates that increasing the level or complexity of skills/tasks performed in a job (i.e., job enrichment) as opposed to merely increasing the number or variety of tasks (job enlargement) can enhance job satisfaction predominantly through quality of work produced (Chung and Ross, 1977; Ford, 1969; Kopelman, 1985). A study of 115 clinical laboratory personnel employed in seven medical laboratories found that jobs high in complexity allowed a person to escape from a negative work environment by turning to the job itself (Champoux & Howard, 1989). Multiskilling or making job functions cross-disciplinary may be one way of providing increased complexity (job enrichment) to improve job satisfaction. Only one other study to date has been conducted comparing the job satisfaction of multiskilled versus singleskilled allied health professionals. A survey of randomly-selected, registered radiographers in the states of Montana, Oregon, Utah and Washington found that 24% of the 116 respondents performed multiple clinical skills. The areas most frequently added were ultrasound, special procedures, computed tomography, and magnetic resonance imaging. Based on responses to the JDI and regression analysis, the work dimension contributed more to overall (global) job satisfaction for the multiskilled radiographers than for the single-skilled personnel. Promotional opportunities were a significant predictor of job satisfaction for the multiskilled radiographers, while pay was a significant predictor for the single-skilled radiographers (Akroyd, 1990).

Purpose of the Study

The purpose of this study was to examine the relationship of job satisfaction and multiskilled practice for allied health professionals as a job redesign strategy. The following research questions were

developed;

1. To what extent are clinical laboratory science personnel functioning in multiskilled capacities?
2. What added skills are being performed by clinical laboratory science personnel functioning in multiskilled capacities by skill and frequency?
3. What is the mean percent of time spent per week on each added skill?
4. What is the impact on job satisfaction of work performed on the job and promotional opportunities for MLTs and MTs, performing multiskilled and single skilled capacities?

Because the literature indicates that multiskilled practice is more likely to occur in small and rural hospitals (Vaughan, Bamberg, Blayney, & Wilson, 1989), each of the research questions were addressed relative to clinical laboratory science personnel employed in hospitals of 200 beds or less. In addition, each of the above research questions were examined relative to certification status (i.e., technician and technologist).

Methodology

Population

The study population consisted of Medical Technologists (MT) and Medical Laboratory Technicians (MLT) in five southeastern states, who were certified by and registered with the American Society of Clinical Pathologists (ASCP). A random sample of 30% of each group (MT and MLT) who worked full time in hospitals of 200 beds or less was selected by the Board of Registry of the ASCP. Previous research has demonstrated that multiskilled practice is more predominant in smaller hospitals. Since multiskilled practice is generally limited, the small hospital environment was selected to attempt to maximize the number of laboratory personnel participating in this job redesign.

The states selected were Alabama, Arkansas, Mississippi, North Carolina and South Carolina. The intent of the study was to examine nontraditional practice patterns for practitioners in the medical laboratory sciences. This necessitated selecting states without licensure in laboratory sciences, radiologic sciences or respiratory care. Radiography and respiratory care have been documented areas of multiskilled practice

for laboratory science personnel (Bamberg, Blayney, Vaughan, & Wilson, 1989; Beachey, 1988; Brandt & Rzonca, 1989; Vaughan, Bamberg, Blayney, & Wilson, 1989). It was important that the states selected for this study do not have statutes limiting or restricting practice in those areas.

Instrumentation

Demographic and Practice Questionnaire

The total instrument consisted of a two-page questionnaire. The first page requested demographic and practice information. Respondents were questioned as to their age, gender, race, state of residence, number of hospital beds in place of employment, and years of experience in clinical laboratory sciences.

The first practice question asked respondents to indicate nonlaboratory duties they performed on a routine basis. The choices were radiography, respiratory therapy, electrocardiography (EKG), electroencephalography (EEG), and other (please specify). The next question asked respondents to indicate the percentage of time they spent in each added-skill area listed.

Job Descriptive Index

The second page of the questionnaire contained the Job Descriptive Index (JDI) to measure laboratory personnel satisfaction with the work performed on the job (WORK) and their satisfaction with promotional opportunities (PROMO) (Smith, Kendal & Hulin, 1969). An overall measure satisfaction with the job (GLOBAL) was also used. For this study the facet measures of WORK and PROMO were the independent variables and GLOBAL was the dependent. Although the JDI contains other measures of satisfaction (coworkers, pay and supervision) these were not deemed appropriate to use when comparing single and multiskilled practice. The constructs of work and promotional opportunities are more logically connected to the tasks performed on the job. The constructs of coworkers, pay, and supervision relate more to job climate than job design and therefore, were excluded from the study.

For each measure of satisfaction there was a group of adjectives, or descriptive phrases, for which respondents wrote "Y" if the phrase described their job, "N" if it did not, or "?" if they were unsure. Each response was converted to a number that enabled a score to be calculated for each area (WORK, PROMO, and GLOBAL).

The JDI is a well-established instrument for job satisfaction research. The psychometric properties of the JDI have been addressed by Smith, Kendall and Hulin (1969), who reported an average corrected reliability of 0.79 and corrected split-half internal consistencies over 0.80 for each of the facets. Young (1982) found an average coefficient of internal consistency of 0.79. In a review of studies over a 16-year period using the JDI, Cook, Hopeworth, and Wall (1981) found the psychometric properties to be within an acceptable range for social science research.

Data Collection

Questionnaires with a cover letter from the authors, a letter of support from the Chairman of the Board of Registry of the ASCP, and a postage paid response envelope were mailed to each subject in the sample. The population, sample size and return rate are reported in Table 1.

Data Analysis

All analyses were performed using PC-SAS, version 6.04 (1987). The data set was created using the PC-SAS FSP function. Frequency distributions and means were used to report demographic data. Forced entry multiple regression was utilized to determine the effect of WORK and PROMO upon overall (GLOBAL) job satisfaction of single and multiskilled MLTs and MTs. A t-test was performed to determine differences in overall job satisfaction between the MTs and MLTs.

Table 1

Population, Sample Size and Return Rate

Certification	Population	Questionnaires Mailed	Questionnaires Returned	% Returned
MLT	556	167	82	49.1
MT	877	263	125	47.5
Total	1433	430	207	48.3

Results

Demographic Data

To better understand the sample (N = 207), some demographic data are reported. There were 174 females (84%) and 33 males (16%). The mean age was 36 years. The race of the sample was 93% white, 5% black, 0.5% Hispanic and 1% categorized as other. The average number of hospital beds was 110 with a bimodal distribution (modes of 100 and 150). The mean number of years of experience in medical laboratory sciences was 13. In examining demographics by certification, there were more males in the MT group (20%) than the MLT group (10%). The mean age for MLTs (32 years) was less than that of the MTs (39 years). Also, the MLTs had a slightly lower mean in years of experience in the laboratory sciences (9) than did the MTs (14). There was greater minority representation in the MLT group (10%) than the MT (5%). A t-test revealed no significant differences in overall job satisfaction (GLOBAL) between MLTs and MTs ($t = -1.86$, $df = 81,124$, $p = .081$).

Statistical Findings

Fifty one (25%) of the respondents were categorized as multiskilled and 156 (75%) as single-skilled. The various skill combinations and their frequencies are shown in Table 2. Thirty one percent of the multiskilled respondents listed two or more skills. The added skill listed most frequently was EKG. Thirty-four (67%) of all multiskilled respondents performed EKGs. Eleven (22%) listed performance of arterial blood gases, and seven each listed radiography (10%), respiratory therapy (10%), and EEG (10%). Thus 45 (88%) of the multiskilled laboratory personnel in this sample performed EKGs and/or arterial blood gases. The average percent of time per week spent performing specific skills varied. The two respondents that listed histology spent the majority of their time (80%) performing only those procedures. Those performing radiography spent 20% of their time on those tasks. The mean percent of time spent by laboratory personnel performing EKG, EEG and respiratory therapy each week was 10% for each skill.

There was a difference in the prevalence of multiskilled practice between MLTs and MTs. Approximately 37% (30) of the MLTs were multiskilled, compared to 17% (21) of the MTs. The skill combinations for each group were similar to the sample as a whole (Table 2).

Table 2

Skill Combinations of Multiskilled Laboratory Science Personnel (N = 51)

Skill Combinations	n	%
EKG	22	43.1
EKG and EEG	5	9.8
Arterial Blood Gases (ABG)	5	9.8
Radiography (RAD)	2	3.9
Respiratory Therapy (RT)	2	3.9
EEG	2	3.9
Histology	2	3.9
RAD and EKG	2	3.9
RAD and ABG	2	3.9
RT and EKG	2	3.9
EKG and ABG	2	3.9
RAD and RT	1	2.0
RT, EKG and ABG	1	2.0
RT and ABG	1	2.0

A forced entry multiple regression model was used for each certification group (MLTs and MTs) to examine any potential differences between single and multiskilled practitioners' satisfaction with WORK and PROMO relative to overall job satisfaction (GLOBAL). For single-skilled MLTs the predictor variables of WORK and PROMO accounted for a significantly large percentage (81%) of the variance in GLOBAL (Table 3). These same variables accounted for 54% of the variance in GLOBAL for multiskilled MLTs. The standardized regression coefficients for each predictor variable in the model are presented in Table 3. The relative contribution of each predictor can be ascertained by the magnitude of its associated standardized (B) or scale free regression coefficient. Values close to 1.0 indicate a very large contribution, while those close to zero indicate little or no contribution (Pedhazur, 1982).

WORK, a predictor of GLOBAL for both single and multiskilled MLTs, was significantly larger for single-skilled than for multiskilled practitioners. PROMO was a significant predictor only for multiskilled MLTs and its contribution to GLOBAL was less than that of WORK.

The results of regression analysis for MTs (Table 4) indicate that the predictor variables of WORK and PROMO accounted for 67% of the variance in GLOBAL for multiskilled MTs and 57% for single-skilled practitioners. The WORK construct was a significant predictor of GLOBAL for both groups of MTs and its contribution was the same. PROMO did not provide a significant contribution to the model for either group of MTs.

Table 3

Results of Regression Analysis for MLTs (N = 82)

Single-skilled n = 52	Multiskilled n = 30
P (model) = .0001	P (model) = .0001
F (model) = 107.6	F (model) = 17.9
Adj. R2 = .81	Adj. R2 = .54
WORK; B = .84*	WORK; B = .57*
PROMO; B = .12	PROMO; B = .36*

*p < .01

Table 4

Results of Regression Analysis for MTs (N = 125)

Single-skilled n = 104	Multiskilled n = 21
P (model) = .0001	P (model) = .0001
F (model) = 69.2	F (model) = 19.9
Adj. R2 = .57	Adj. R2 = .67
WORK; B = .75*	WORK; B = .75*
PROMO; B = .04	PROMO; B = .14

*p < .01

Discussion

The results of this study indicate that multiskilled functioning among clinical laboratory workers (MTs and MLTs) in smaller hospitals (i.e., < 200 beds) is modest, with 25% of the respondents performing added-skills. A greater percentage of MLTs than MTs were functioning in multiskilled capacities. It is difficult to compare the percent of laboratory personnel functioning in a multiskilled capacity to other allied health groups since the data are limited. A national survey of nuclear medicine technologists found 19% functioning in a multiskilled capacity (Ciani, McKeoron, Exten, & Price, 1985). A regional study of radiographers found 25% practicing added skills (Akroyd, 1990). In previous studies the added on skills were predominantly in the radiologic sciences.

The most frequently added-skills of the respondents in this study were EKGs (67%) and ABGs (89%). Other added skills, though performed less frequently, included EEG, radiography, and respiratory therapy. Based on the level of education and functioning of MTs and MLTs, adding EKG and ABG skills on a routine basis could be viewed as adding tasks of a parallel level or less. This would not be viewed as increasing job complexity simply increasing variety. The addition of such tasks, viewed as mundane and repetitive tasks, is job enlargement rather than job enrichment. A major component of Hackman and Oldham's (1980) theory of work redesign is based upon the significance of the work tasks or what they call "core job characteristics." If tasks are viewed as repetitive or low level, the ability of the work to influence employee job satisfaction may decrease.

The regression analyses indicated the nature of work performed (WORK) was a significant predictor of overall job satisfaction for multiskilled and single-skilled MTs and MLTs. Interestingly, the contribution of WORK to overall job satisfaction was similar ($B > .75$) for multiskilled MTs, single-skilled MTs, and single-skilled MLTs, but less ($B = .57$) for multiskilled MLTs. For MLTs the addition of repetitive tasks may actually decrease job satisfaction. Since they are already at a lower level in the medical laboratory hierarchy relative to MTs, the added-skills may be viewed as simply an increase in workload without the potential advantages of job enrichment. The MTs, who perform added skills perceived as lower level, may compensate via their higher status in the laboratory hierarchy. Higher level tasks such as administration,

quality assurance, and/or infection surveillance functions currently performed could also offset the necessity to perform lower level skills.

The findings of this study conflict with a similar one regarding single and multiskilled radiographers' job satisfaction (Akroyd, 1990). In Akroyd's study the WORK variable contributed significantly more to multiskilled radiographers' job satisfaction than single-skilled. The multiskilled radiographers' performed sonography, computed tomography, magnetic resonance imaging and vascular special procedures. The previous skills in the radiologic sciences are often associated with increased prestige, higher pay and elevated task complexity.

The addition of equal or perhaps lower level skills for multiskilled MLTs in this study may be a factor in explaining the reduced influence of WORK upon their job satisfaction when compared to single-skilled MLTs. The previous notion is supported by Hackman and Oldman (1980) who contend that simply adding more of the same (or lower level) skills will not increase the "experienced meaningfulness of the work," and it may have the opposite effect. Champoux and Howard (1989), studying medical technologists, found the complexity of work to be an important factor in staff's perception of their job.

Promotional opportunities (PROMO) contributed significantly to overall job satisfaction only for the multiskilled MLTs. It may be that the MLTs view their additional assignments as a way to expand themselves technically, increase their job security (i.e., value to their employer), and prove their commitment to the institution in an effort to increase their chances of promotion or advancement within the laboratory and/or institution. They may view the added skills as a way to increase potential promotional opportunities, but performing those skills may have a negative impact upon their perception of the work performed on the job.

Conclusions and Recommendations

Conclusions

Based on the results of this study, the following conclusions can be drawn relative to clinical laboratory personnel practicing in hospitals of 200 beds or less;

1. The prevalence of multiskilled practice for the sample was moderate (25%). The percent of multiskilled MLTs was twice that of MTs.
2. The skills most frequently added were EKGs (67%) and ABGs (22%) with a few performing EEGs (14%), radiography (14%), and respiratory therapy (14%).
3. The percent of time per week spent performing added skills was; RAD 20%, EKG 10%, ABG 10%, PT 10%, and EEG 5%.
4. a. Work performed on the job (WORK) was a significant predictor of both single and multiskilled MLTs and MTs job satisfaction (Tables 3 and 4).
   b. There was no significant difference in the contribution of WORK to the overall job satisfaction of single and multiskilled MTs.
   c. Opportunities for promotion (PROMO) were not a significant predictor of job satisfaction for either single and multiskilled MTs.
   d. WORK contributed significantly more to the overall job satisfaction of single-skilled MLTs than it did multiskilled (B = .54). e. PROMO was a significant predictor of only multiskilled MLTs job satisfaction (B = .36).

Implications

Adding skills that employees consider equal or less than existing ones may create increased stress and possibly turnover. Although work contributed significantly less to multiskilled MLTs job satisfaction than single-skilled, respondents may have viewed it necessary to perform such skills in order to increase their promotional opportunities.

An implication for future research in this area is that when examining the relationship of added skills to a variety of job constructs, the importance of those skills from the employees' perspective needs to be assessed. The relationship of skill level and job satisfaction may then be more clearly explained in terms of job enrichment and job enlargement.

Recommendations

Relative to the findings of this study, it appears that managers need to be attentive to job

enrichment versus job enlargement in redesign or restructuring efforts. If the added-skills are of a higher level or more complex nature (job enrichment) this may influence job satisfaction more than adding skills of equal or less task complexity (job enlargement). Enriching the job of disillusioned employees may offer a way to remotivate workers and make them more committed to the institution. Added-skills training offered by health occupations educators may be a valuable service to managers struggling with the logistics of job redesign.

In summary, the following recommendations can be made based on the findings of this study and their correlation with previous findings:

1. In redesigning clinical laboratory workers' jobs, managers should attempt to increase the variety and task complexity of jobs through added-skills training and assignments.
2. In redesigning clinical laboratory workers' jobs, managers should obtain the input of the employees themselves as to desired addedskills.
3. In training clinical laboratory workers for added-skills functioning, managers should avail themselves of the health care delivery, clinical sciences, training, and competency validation expertise of health occupations educators.

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HEALTH OCCUPATIONS STUDENTS OF AMERICA: A PROFILE

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HEALTH OCCUPATIONS STUDENTS OF AMERICA: A PROFILE

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Abstract: The purpose of this study was to field test an instrument designed to identify the characteristics and attitudes of Health Occupations Education Students attending the 1990 Health Occupations Students of American (HOSA) National Leadership conference. Specific questions about their program of studies and about HOSA were asked for providing a profile of this student. While HOSA is approaching its 20th year as a vocational student organization, little is presented in the literature about the HOSA student in general. While only a 4% convenience sample is represented, the population represents several states, a wide range of students, and several first time attendees. Both officers and general members are included in the sample. Students who responded indicated that they were prepared for their competitive event by their teacher. Most attended the conference on funds provided through fund raising and/or by parents. Contrary to popular thought, most students did not know about HOSA prior to entering their health occupations program. Students responded that they benefited from both their health occupations education course and from their participation in HOSA. Their experiences and participation helped them make their career decision and helped to reaffirm it.

Students in vocational education programs are provided an opportunity to participate in a student organization as an integral part of their studies. There are currently eight such organizations. These include Distributive Education Clubs of America (DECA), Future Business Leaders of America (FBLA), Future Farmers of America (FFA), Future Homemakers of America/Home Economics Related Organization (FHA/HERO), Health Occupations Students of America (HOSA), Office Education

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Association (OEA), Technical Students of America (TSA), and Vocational Industrial Clubs of America (VICA). While vocational student organizations may serve as an integral part of the vocational curriculum, the opportunity to participate in a "club" is a high priority for many students when selecting a specific vocational course or program track. For the most part, vocational student organizations are designed to develop leadership skills, increase student involvement, and serve to increase student retention. While many of the older VSO's have been researched over the years, the data on the HOSA students has been limited due to the immaturity of the organization. This year, 1991, was the 16th year of operation since the constitutional convention was held.

HOSA is an organization which has evolved over a period of several years because of significant efforts and activities to establish a separate national vocational student organization for students enrolled in health occupations education programs. Two significant events include the endorsement by the Health Occupations Education (HOE) Division of the American Vocational Association (AVA) in 1973 and the Constitutional Convention in 1976. The Constitutional Convention of the National Association, Health Occupations Students of America was held in Arlington Texas with participating states of Alabama, New Jersey, New Mexico, Oklahoma, Texas and North Carolina. Since that time the organization has grown to include 42,000 members from 35 states.

Literature Review

A review of the literature revealed that little has been written about Health Occupations Students of America (HOSA). While there are references to materials available to teach students, (Gillespie,1981; Oklahoma State Department of Vocational and Technical Education, 1989) few studies have been reported which would provide information about the HOSA student. Walters and Wilmoth (1988) reported on leadership opinion measures of student officers in HOSA and in 1989 reported on leadership attributes and personality preferences of high school student leaders in HOSA. In these studies, there was a strong relationship between the adapted Leadership Opinion Questionnaire and the Myers-Briggs Type Indicator used to measure relationships of HOSA students. In a different study,

Walters, Wilmoth and Pitts (1988) identified personality traits of High School HOSA officers. These studies focused on the officers and not the general membership.

HOSA students were included in the study done by Jeffreys and Camp (1988) who analyzed variables related to high school students' level of participation in vocational student organizations. Information about HOSA students specifically, was not reported.

Papers and research have been presented indicating that student organizations and related student activities can make significant contributions to students' personal and skill development (Abrahamowicz, 1988); vocational student organizations provide an important bridge between the adult world of work and the world inside the classroom (Miller, 1983). Kantner (1985) assessed the value of vocational student organizations focusing on the development of a sense of civic responsibility and entry employment skills. Unfortunately, these references do not site HOSA students specifically but support the concept that student organizations are valuable to the overall growth and development of students.

Purpose of the Study

The purpose of the study was to solicit information about the health occupations education students who were attending a National Leadership Conference (NLC) and to field test an instrument that could be used to gather information about future generations of health occupations education students. Three areas of information were reflected in the research questions of: 1) Who is the health occupations education student attending the Leadership Conference; 2) What factors are related to the reasons for entering the health occupations education program; and 3) What factors did the student believe benefitted them because of participation in Health Occupations Students of America (HOSA). This information, when reported, would attempt to provide a profile of students enrolled in a health occupations education program and members of the vocational student organization (VSO) specific for health occupations education students. Since little information about the HOSA student is reported in the literature, this information will be used to add to the data base of students.

Methodology

Population

The population of students surveyed in this study were those students attending the 1990 HOSA leadership conference held in Kissimmee, Florida. Because this was an initial study and the survey instrument was only to be field tested, a convenience sample of students attending the convention were invited to complete the instrument. There were 2,433 participants at the 1990 conference of which 95 completed the questionnaire, representing a 4% sample.

Instrumentation

An instrument was designed to solicit information about health occupations education students based upon the three research questions, who is the health occupations education student attending the 1990 Leadership Conference, what factors were related to entering the health occupations education program, and what factors did the student believe benefitted them because of participation in HOSA. The instrument had three sections designed to gather information about the student (demographic), knowledge about HOSA before entering the program, and their perception of benefit of HOSA to their education.

To facilitate the student's response to the questions, only yes-no questions, item check lists and short answers were used. Space was allocated for a written explanation to questions should the student desire to respond. No attempt was made to force a response beyond a simple answer. A 20 item questionnaire was developed and reviewed for clarity and relationship to the initial research questions and face validity by five health occupations education teachers, who were HOSA advisors. Because of the review, two questions were eliminated. A total of 18 questions remained; eight were demographic, three were related to knowledge about HOSA before enrollment and seven were related to factors about participation in the health occupations education program and HOSA.

Data Collection

Data is reported on all students attending the 1990 HOSA National Leadership Conference who

agreed to complete a short questionnaire. A total of 95 students actually completed the questionnaire that represented 4 % of those in attendance.

Data Analysis

Observation was made of each student completing the questionnaire to determine the length of time needed to answer the questions. No student took more than 10 minutes to complete the questionnaire, with the average time being 5 minutes.

Findings and Discussion

Demographic Data

Twenty two states were represented from the population of 95 students, states with the highest number of respondents were from Florida (9) and Oklahoma (9). Table 1 lists the responses from high to low for all states represented.

Table 1

Rank and Frequency of Responses by State *

State	Frequency	Rank
Florida	9	1
Oklahoma	9	1
Louisana	8	2
New Jersey	7	3
North Carolina	6	4
Tennessee	6	4
Alabama	5	5
Maryland	5	5
Utah	5	5
Kentucky	4	6
Michigan	4	6
Colorado	3	7
Kansas	3	7
Pennsylvania	3	7
Texas	3	7
Iowa	2	8
Maine	2	8

* 4 no responses

No responses were obtained from student from Alaska, Arizona, Arkansas, California, Connecticut, Delaware, District of Columbia, Georgia, Hawaii, Indiana, Massachusetts, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hamshire, New Mexico, New York, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, Vermont, Washington, West Virgina, Wisconsin, and Wyoming.

Respondents ranged in age from 15 to 55, with the majority of respondents (78%) being under age 20. Table 2 shows frequency of age of respondents.

Forty percent of the respondents listed their grade level as grade 12 and 15% indicated they were in the 11th grade or had just graduated. Table 3 shows frequency of age distribution. For 82% of the respondents, the 1990 HOSA convention was their first conference, 13.7% were attending for the second time.

Table 2

Age and Frequency of Responses *

Age	Frequency
17	28
18	25
16	18
28	4
26	3
15	3
55	1
48	1
41	1
38	1
37	1
32	1
30	1
23	1
22	1
20	1

* 4 no answer

Table 3

Frequency of Responses by Grade Level *

Grade Level	Frequency	Percent
12	38	40%
11	14	15%
Just Graduated	14	15%
Post Secondary	9	9%
College Freshman	6	6%
10th grade	4	4%
College Junior	3	3%
Student Practical	3	3%
Undergraduate	1	1%
Vocational	1	1%

* 2 no answer

Of those respondents, 46 were local officers, 5 were regional officers, 9 were state officers and 2 were national officers. The remainder (42) indicated no HOSA office held. Table 4 shows responses by office held. While respondents were not asked the specific office held, some responded. Nine respondents indicated they held more than one office, such as regional and state.

A major portion of the National Leadership Conference is devoted to participation in knowledge and skill competitive events. Those events included are divided into four categories plus Pilot Events. Category I - Health Related Events include Dental Spelling, Dental Terminology, Medical Spelling, Extemporaneous Health Display, Medical Terminology, Standard First Aid/CPR. Category II - Health Occupations Skills Events include Dental Assisting, Medical Assisting - Clerical, Medical Assisting - Clinical, Medical Laboratory Assisting, Nursing Assisting, Practical Nursing, Advance Nursing, Dental Laboratory Technology, Respiratory Care, Surgical Technology, Veterinary Assisting, Opticianry Assisting. Category III - Individual Leadership Events include Extemporaneous Speaking, Job Seeking Skills, Prepared Speaking, Extemporaneous Writing. Category IV - Team Leadership includes Community Awareness Project, HOSA Bowl, Parliamentary Procedure and Outstanding HOSA Chapter.

Respondents were asked to indicate in which event they were competing. Frequency of responses in each event is presented in Table 5. Participants from all of the HOSA competitive

Table 4

Frequency of Responses by Office Held *

Office Held	Frequency
Local Officer	46
President	6
Vice President	3
Historian	1
Class representative	1
State Officer	9
President	1
Vice President	1
Historian	1
Regional Officer	5
Vice President	1
National Officer	2

* 4 no answer

events were represented by the respondents with the greatest number (25) being in the HOSA Bowl event. Several students indicated more than one event. Two students indicated they were attending as Outstanding HOSA student.

To participate in events at the NLC, students first compete at the regional level in their state, followed by the state level. Each state generally sends first, second, and third place state winners to Nationalcompetition where students compete against the best from each state. Preparation for national competition involves many practice hours with classmates, teachers, parents or local health care personnel. Respondents were asked to identify from whom they learned the most in preparing for their event. Many of the respondents (N = 32) indicated that they learned the most in preparing for their competitive event from their teacher, eight identified a teacher's name. Table 6 indicates the frequency of responses of those who provided preparation for competition.

Table 5

Frequency of Responses by Competitive Event *

Competitive Event	Frequency
HOSA Bowl	25
First Aid/CPR	9
Job Seeking Skills	9
Medical Spelling	7
Medical Terminology	7
Prepared Speaking	7
Community Awareness Project	6
Nursing Assistant	4
Extemporaneous Speaking	4
Parliamentary Procedure	3
Advanced Nursing	3
Outstanding HOSA Student	2
Medical Nursing	2
Dental Assistant	2
Dental Spelling	2
Medical Assisting Clerical	2
PN Skills	2
Scrap Book	1
Health Display	1
Clerical	1
Dental Lab Technology	1
Dental Terminology	1
Surgical Technician	1
Opticianry	1
Physical Therapy Assisting	1

* Some students competed in more than one event

Attending the NLC involves cost of travel and per diem as well as miscellaneous amount for personal items and souvenirs. When asked from which source money was obtained for attending the conference, 59 responded that it came from fund raising, 47 from parents, 37 from schools and 32 from school districts and 18 from business partners, indicating a variety of and multiple resources were used. Table 7 displays source of funding and frequency.

Table 6

Frequency of Responses of Event Preparation Assistance *

Assistance	Frequency
Teacher	32
Individual by name	28
Counselor	27
Myself	12
Classmates	2
Toast Masters	2
Parents	1
Friends	1
Mentor	1
Local Paramedic	1
Vocational Leadership Training	1
Tabers Encyclopedia	1
HOSA History	1
Anatomy	1
Parliamentary Procedure	1

* Multiple entries cause N > 95

Table 7

Frequency of Responses for Sources of Funding

Sources	Frequency
Fund Raising	59
Parents	47
School	37
School District	32
Business Partnership	18
Other	28

Using a ranking-type scale participants responded to "from which source did you obtain the most money?" Table 8 displays priority of funding sources. Twenty one of the students indicated fund raising for the highest amount, and 13 indicated parents contributed the highest amount.

Table 8

Priority of Ranking of Monetary Support

Sources	Priority Rank 1	2	3	4	5
Fund Raising	10	11	2	1	2
Parents	6	7	4	4	3
School	7	5	5	0	3
School District	7	7	1	3	2
Business Partnership	5	3	6	1	0
Other	2	6	2	2	2

Knowledge about HOSA before enrollment.

The second part of the study dealt with the knowledge of students before their enrollment in their health occupations program. Students were asked if they knew about HOSA before enrollment in the health occupations education programs. Seventy one percent indicated they did not. Refer to Table 9.

Table 9

Knowledge of HOSA before Class Enrollment

Response	Frequency	Percent
No	67	71%
Yes	27	28%
No answer	1	1%

Respondents were asked to indicate from whom they learned about HOSA. For 69% of the respondents teachers were the source of information about HOSA . Many students indicated more than one source of information which included classmates 19%, and guidance counselors 8%. Refer to Table 10.

Table 10

Sources of Information about HOSA *

Source	Frequency	Percent**
Teacher	66	69%
Classmate	18	19%
Guidance Counselor	8	8%
Parent	2	2%
Sibling	1	1%
Friend	1	1%
Advisor	1	1%
Instructor	1	1%

* no response 12
** Multiple responses account for percentage > 100%

Respondents were asked to indicate their reasons for enrolling in the health occupations education program. The majority of students (63%) enrolled in the health occupations education program because they were interested in the health field, a medical career or in becoming a nurse, a doctor, an Obstetrician/gynecologist, a surgeon or a physical therapist. Other reasons given for enrolling in the program were "like to work with people," (8%), "it seemed interesting," (5%), "to further my career."(3%) and "enjoy being competitive." (3%). Table 11 indicates the frequency of distribution of responses.

Benefit of health occupation education program and HOSA.

In the third part of the questionnaire, respondents were asked how they believed they benefitted from the health occupations education and HOSA. Whiletype of credit should be of interest to students, particularly high school students meeting graduation requirements, students were not really clear about the type of credit they were receiving from their participation in a health occupations education program. Fifty-two percent indicated they received vocational credit from one-half to twenty credits. Twenty percent indicated they received science credit from one to four hours. The remainder indicated math, health, elective, fundamentals, leadership, science elective and LPN.. See Table 12 & 13.

Table 11

Frequency of Reason for Entering Health Career *

Reason	Frequency	Percent
Interested in Health Field	21	22%
Interested in Medical Career	17	18%
Interested in Becoming a Nurse	14	15%
Like to work with people	8	8%
It seemed interesting	5	5%
Interested in becoming a doctor	5	5%
It was required	3	3%
To further my career in Health Industry	3	3%
Enjoy being competitive	3	3%
Interested in becoming a Physical Therapist	2	2%
Preparation for college	2	2%
My employer	1	1%
My instructor & peers	1	1%
I knew the teacher	1	1%
Interested in science	1	1%
Interested in health education	1	1%
Worked in area last 10 years	1	1%
Worked at an adult foster care home	1	1%
Work as Candy Striper	1	1%
Looking for a career change	1	1%

* no response 3

Table 12

Frequency of Type of Credit Awarded *

Type of Credit	Frequency	Percent
Vocational	65	52%
Science	26	20%
Math	6	5%
Health	6	5%
Other not identified	4	3%
Elective	3	3%
LPN	2	1.5%
Fundamentals	1	.7%
Leadership	1	.7%
Science Elective	1	.7%
High School	1	.7%

* no response 10

Table 13

Number of Credits by Type Awarded for HOE

Type of Credit	Number	Frequency
Vocational		
	1/2	1
	1	10
	2	15
	2 1/2	1
	3	12
	4	4
	6	1
	9	4
	15	3
	20	3
	not listed	11
Science		
	1	15
	2	4
	3	1
	4	3
	not listed	3
Math		
	1	3
	4	2
	not listed	1
Health		
	1	3
	2	2
	not listed	1
Other not identified		
	1	1
	1 1/2	1
	4	1
Elective		
	1	2
	2	1
LPN		
	6	1
Fundamentals		
	6	1
Leadership		
	not listed	1
Science Elective		
	1	1
High School		
	1	3

When asked about their opinion of their HOE program, the respondents were overwhelmingly positive that their class helped them make a decision about their health career (93%). In addition 84% indicated the program helped to reconfirm their decision to enter a health career. Table 14 displays the frequency of responses to the questions "Has this class helped you make a decision about a health career" and "Has this class helped you reconfirm your decision about a health career."

Table 14

Responses to Opinions about HOE Program/course

Question	Response Yes	No	No answer
Make Decision	88	5	2
	93%	5%	2%
Re-confirm Decision	80	12	3%
	84%	13%	3%

Students were enthusiastic about the benefits of HOSA. A total of 119 responses were received to the question, "What is the most beneficial thing you learned from HOSA?" Multiple responses account for more instances than participants. Nineteen percent felt that team work was the most beneficial thing they learned through their HOSA activities, followed closely by "how to help and care for other people." (18%). For 14% of the students their most beneficial thing about HOSA was "leadership skills" and for another 14% "self-confidence and accepting challenges" were the greatest benefits. Table 15 presents the benefits of HOSA.

Seventy-seven percent of the students could not identify any thing least beneficial about HOSA. Table 16 presents those statements of least beneficial items relating to HOSA activities. The last two questions that were asked respondents dealt with their opinions about the HOE class. There was a great variety of responses to a question about the most beneficial thing learned from their HOE

class. Table 17 depicts the benefit statements and their frequency. Fifteen percent indicated teamwork, 12% the anatomy of the human body, 12% the different fields of medicine and career goals, 9% First Aid/CPR. The majority of students (91%) were not able to list any thing not beneficial about their HOE program. See Table 18.

Table 15

Benefits of HOSA *

Statement	Frequency	Percentage
Team work	23	19%
How to help & care for others	21	18%
Leadership skills	17	14%
Self confidence & accepting challenges	17	14%
How to be competitive	6	5%
Nothing is impossible	5	4%
How to communicate with others	4	3%
Responsibility and importance of health care professionals	4	3%
First aid and Life Saving Techniques	3	2%
Making new friends	2	1.7%
Parliamentary procedure	2	1.7%
How to practice my skills	2	1.7%
Not sure	1	.8%
How big this club is	1	.8%
Not everyone is a winner	1	.8%
Scholarship	1	.8%
Medical Terminology	1	.8%
You can have fun by working hard	1	.8%
Public Speaking	1	.8%
How to conduct myself around the health community	1	.8%
The need for dedicated people	1	.8%

No answer 4

Table 16

Non-Benefits of HOSA

Statement	Frequency	Percentage
No answer	32	34%
Nothing	22	23%
Everything was beneficial	11	12%
N/A	8	8%
?	4	4%
not sure	2	2%
Sometimes people are elected on popularity and not by their abilities	2	2%
Magic tricks and singing	2	2%
Parliamentary procedures	2	2%
The wide gap between the way secondary and post secondary students are treated different	1	1%
How students do not take HOSA seriously	1	1%
How some nurses do not take their careers seriously	1	1%
That winning is everything	1	1%
The time it takes	1	1%
How to make beds	1	1%
How to get to Springfield	1	1%
How to sell hot dogs	1	1%
Our local chapter did not really do anything	1	1%

Table 17

Benefits of HOE Course *

Statement	Frequency	Percentage
Team work	14	15%
The anatomy of the human body	11	12%
The different field of medicine and career goals	11	12%
First aid and CPR	9	9%
Basic bedside care	6	6%
How to communicate with others	4	4%
Everything was beneficial	4	4%
Responsibility	3	3%
Midical terminology	3	3%
The skills of medical and dental procedures	3	3%
Preparation for College	3	3%
How important health is	2	2%
Leadership	2	2%
?	1	1%
You can learn alot in 2 hours	1	1%
How to better take care of my family	1	1%
You have to have an attitude	1	1%
You can help others by helping the students who need help	1	1%
How it works	1	1%
How to work with problems	1	1%
EMT course	1	1%
Parliamentarly procedure	1	1%
Committment	1	1%
Organization	1	1%

No answer 9

Conclusion

The purpose of the study was to solicit information about the health occupations education students who were attending a National Leadership conference and to field test an instrument that could be used to gather information about future generations of health occupations education students.

Table 18

Non-Benefits of HOE Course *

Statement	Frequency	Percentage
No answer	47	49%
Nothing	14	15%
Everything was beneficial	11	11%
N/A	8	8%
?	2	2%
no comment	2	2%
Color plates	2	2%
How to make a bed with two straight sheets	1	1%
That winning is everything	1	1%
Attitudes toward learning new challenges	1	1%
Bad sportsmanship	1	1%
Don't be stuck up	1	1%
Economics	1	1%
Radiology	1	1%
Clinicals	1	1%
Cancer treatment	1	1%

Specifically questions of: Who is the health occupations education student attending the Leadership Conference, What factors were related to entering the health occupations education program, and What factors did the student believe benefitted them because of participation in HOSA were asked to provide a profile of the students enrolled in a health occupations education program.

The questionnaires were completed in an average of 5 minutes. A range of students responded to the questions including first time attendees as well as officers. Both secondary level students and post-secondary level students responded. Because only a 4% convenience sample responded to the questionnaire, no generalizations can be made about HOSA students.

Students who responded to the questionnaire did not know about HOSA before their enrollment in the health occupations education course or program that suggests that students are not signing up for the course solely for the HOSA organization activities. The teacher is the most common source of

information about HOSA so it will be important that teachers are informed about the organization and its benefits to encourage student participation.

While the participants at the national leadership conference are more involved students and the responses may be skewed, it did not seem that there were participants who were in the course for other than legitimate reasons, i.e., most indicated an interest in the health field. The type of credit is not a concern to students enrolled in health occupations education or they did not understand the significance of the credit.

Students are overwhelmingly positive about the benefits of their health occupations program and about HOSA. Without question, the majority feel they have benefitted from their participation and had difficulty pointing out any experiences that were not beneficial. The programs have helped students make and reaffirm career decisions to enter the health field.

Recommendations

Because the literature does not include an abundant amount of information about the HOSA student, the major recommendation of this study must be to encourage more research. The HOSA student can provide a wealth of information about how well the programs are progressing and how successful the student organization is in the development of health occupations education students. Information about the preparation for competitive events can help to evaluate our industry partnerships as well as the HOE-HOSA partnership.

A second recommendation would be to refine and expand the questionnaire so that it could be administered to all participants of the national leadership conference to yield a greater amount of data that can be generalizable to the population as a whole. This would require permission of the HOSA Board and support of the Board to encourage completion of the questionnaire.

A third recommendation would be to distribute the questionnaire to all HOSA students nationwide through the HOSA, Inc network to obtain information on the entire HOSA population, not just officers and state competitive event winners.

Information about health occupations education in general is lacking in the literature. It is recommended that the professionals in the field study and disseminate research findings about health occupations education programs and their participants so that generations to come will have a legacy from which to expand the knowledge base.

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COMPETENCIES FOR TEACHING AND NEED FOR UPDATE: PERCEPTIONS OF SECONDARY HEALTH OCCUPATIONS TEACHERS

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COMPETENCIES FOR TEACHING AND NEED FOR UPDATE: PERCEPTIONS OF SECONDARY HEALTH OCCUPATIONS TEACHERS

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Abstract: The purpose of this study was to determine the demographic characteristics of secondary health occupations teachers, the perceptions of their competencies for teaching, and their need for occupational update skills and inservice topics. The population consisted of all 78 secondary health occupations education teachers in Alabama. Descriptive statistics including reliability were computed. The results indicated that the majority of health occupations education teachers had 8-15 years of teaching experience, typically rated themselves high on the majority of teacher competencies, and indicated an interest in several degree programs in health occupations education. A need was also stressed for workshops, inservice, and/or course offerings addressing health care skills and topics. Suggested recommendations were made for teacher educators to continue to provide inservice, update-skills workshops, and desired degree programs in the areas of need, and to determine needs on a continuing basis.

Background for the Study

Professional development of health occupations education (HOE) teachers and rapid

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advancements in health care and in teaching, make life-long teacher education a necessity. The following definition for education for health occupations given by Terry (1981) further exemplifies the challenges HOE teachers face today:

> Education for health occupations comprises the body of related subject matter, or the body of related courses, and planned experiences designed to impart knowledge and develop understandings and skills required to support the health professions. Instruction is organized to prepare students for occupational objectives concerned with assisting qualified personnel in providing diagnostic, therapeutic, preventive, restorative, and rehabilitative services to people, including understandings and skills essential to provide care and health services to patients. (p. 18)

The foregoing addresses the technical curricular aspect of health occupations teacher education, however, educational competencies are also imperative for HOE teachers to effectively teach students (Gorman & Hamilton, 1975). It is of utmost importance that HOE teachers "seek and find new approaches in teaching methodology, obtain new information concerning career patterns, and research innovative instructional programs" (Byrne, 1983, p. 1). In addition, as reported by Byrne, HOE teachers need internal motivation to develop and improve. In the past, health occupations educators have sought "self-improvement in the form of advanced coursework, attendance at institutes and workshops, and informal idea exchanges . . . " (Byrne, 1983, p. 1) with their peers. Educators may develop answers to challenges in teaching based on their own experiences or turn to peers for practical advice. However, according to Byrne there is an obvious lack in the " . . . consistent, uniform approach to [updating skills and] faculty development in terms of individual and school system needs . . . [, interests, and goals]" (p. 1).

Research (Van Fleet, 1979; Webster, 1978; Witmer, 1989) indicates that effective staff development should be continuous and on-going to upgrade existing skills and introduce new ones. Educating young people is becoming more complex, and teachers rapidly should assimilate research findings and current trends in an evolving health care system. The areas of need and interest should

be addressed to provide teachers with necessary skills. New challenges make it essential that the competencies of HOE teachers reflect these demands (Van Fleet, 1979; Webster, 1978; Witmer, 1989). Health occupations teachers need to be able to teach these competencies (Witmer, 1989), but they may not be aware of how extensively developed their own theoretical understanding must be. Health care educators, therefore, need training in curriculum and classroom management (McKibbin, 1978-79) to provide an opportunity to remain occupationally competent and alert to improvements and new techniques in health care (Cooke, 1985; Gorman & Hamilton, 1975; Scott, 1976; Terry, 1981; Webster, 1978).

In response to professional development for teachers, one may pose the question: "How can teachers keep their skills and methods current and still provide quality education for their students"? Research supports the premise that in order for teachers to be involved in continuing education, they should be involved in the planning and implementation of teacher education (Byrne, 1983; Edelfelt, 1976; Edwards, 1975; Hawke, 1975; Ingersoll, Jackson & Walden, 1975; Jensen, 1978; Witmer, 1989). Often teachers have been reported to feel that they have been left out of the decision making process when administrators made content and organizational decisions for continuing education or inservice activities (Ingersoll, 1976; Zirkel & Albert, 1979). Inservice, continuing education, and teacher education are the methods of choice for updating teachers' skills and methods of teaching; however, before a plan can be developed, the needs and interests of the teachers should be assessed. Three obvious reasons for including teachers in this planning are: (a) Teachers are more likely to participate when they are involved, (b) relevant educational activities demonstrate financial responsibility, and (c) administrative decisions independent of teacher influence, tend to patronize teachers which may cause noncompliance (Ingersoll, 1976).

According to Kremer-Hayon (1987) and Zigarmi, Jensen and Betz (1977) it can be concluded from assessing teachers' attitudes about inservice education, that the most useful types of educational programs are based on their perceived interests. Moreover, to understand fully, researchers should approach teaching from the perspective of teachers (Kremer-Hayon, 1987). This process should be

dynamic and require periodic assessment to keep up with current trends.

Presently, all HOE teachers may not be prepared to implement viable cluster programs because of (a) the diversity of educational backgrounds in health care, (b) the various types of teacher certification available for teaching in field, and (c) the various types of licensure or certification in health care fields being due to results of completion of a minimum of a two-year educational program equivalent to an associate degree in one specific health care profession, and recent work experience in a health related field. Typically, many health care professionals have not taken courses in preparation for teaching (Walters, 1988). Therefore, subjects in the present study were asked to provide information descriptive of their educational backgrounds, needs and interests. Results can assist, thus, in planning more effective educational programs for HOE teachers according to their perceived needs, as well as provide information to the State Department of Education for upgrading certification requirements for teachers. In addition, other researchers may utilize the instrument for identifying inservice educational needs.

Purpose of the Study

Recognizing the importance of professional development for teachers, the purpose of this study was to determine specific demographic characteristics and perceived educational needs and interests of secondary health occupations teachers in Alabama. The foregoing purpose was formulated into the following research questions:

Question 1: What are the salient demographic characteristics of current HOE teachers influencing their present and future educational needs and interests?

Question 2: How do HOE teachers rate themselves on selected teaching competencies?

Question 3: What health care update-skills are needed by HOE teachers?

Question 4: What inservice topics are needed by HOE teachers?

Limitations

One limitation of the study was to include only an assessment of educational needs and interests

of HOE teachers in one southern state even though the total number of teachers was small. In addition, data were reduced only with frequency and percentage distributions, and reliabilities.

Assumptions

Two assumptions were made: (a) competencies identified in the literature are among those necessary for effective teaching in HOE, and (b) teachers can accurately assess their professional competence.

Definitions

The following definitions are provided for clarification of variable terminology for health occupations professionals. The definitions provided apply only to certificates issued in Alabama. Each is a non-professional certificate.

Type III Teacher Certification for HOE Teachers. The certificate issued to health care professionals who have completed a health occupation program equivalent to an associate degree, have a valid current licensure or certification as a health care practitioner, and have one year of work experience in the last three years or three years of work experience in the last 10 years.

Type II Teacher Certification for HOE Teachers. The certificate issued when all requirements for Type III are met and completion of 20 quarter hours of designated coursework.

Type I Teacher Certification for HOE Teachers. The certificate issued when all requirements for Type III and II certification have been met, and 45 quarter hours of designated coursework. This certificate provides salary equivalent to that for a Master's Degree.

Methodology

Population

The population included all high school HOE teachers in the state of Alabama. The entire population of 78 teachers was selected since the number of health occupations education teachers was small.

Instrumentation

To determine high school HOE teachers' perceptions of their educational needs and interests, a 209 item questionnaire was developed by the researchers from a literature review. The questionnaire was designed to encompass five different components: (a) Part 1, Demographic Information, (a) Part 2, Educational Status, (c) Part 3, Teacher Competencies, (d) Part 4, Health Care Update-Skill Needs, and (e) Part 5, Inservice Topic Needs.

Part 1 was intended to assess the status of HOE teachers in Alabama with respect to demographic information. This section contained 11 items regarding (a) gender, (b) age, (c) employment status, (d) type of school, (e) years of work experience, (f) teaching experience, (g) professional title, (h) tenure status, (i) educational status, (j) sabbatical leave status, and (k) ability to continue education if a graduate assistantship were available.

Part 2 included 15 items to assess teachers' educational backgrounds including: (a) current degree, (b) professional certification, (c) HOE certification, (d) First Aid/CPR certification, and (e) licensure and/or certification in a health care profession.

Part 3 contained 180 items. The items were related to types of degrees desired (7 items), preferences for scheduling courses (6 items), preferences for location for courses to be taught (6 items), and 22 categories of competencies (161 items). This section was designed to assess educational competencies of teachers to determine skills necessary to implement, improve, and maintain a viable HOE program and assess relative interests of teachers in pursuing additional education. The 22 categories (with numbers of items parenthetically appended) included:

1. Program Planning, Development and Evaluation (12),
2. Instructional Planning (7),
3. Instructional Execution (31),
4. Instructional Evaluation (7),
5. Instructional Management (11),
6. Guidance (6),

7. School-Community Relations (11),

8. Student Vocational Organization (7),

9. Professional Role and Development (9),

10. Coordination of Cooperative Education (11),

11. Implementing Competency-Based Education (CBE) (7),

12. Serving Students with Special/Exceptional Needs (14),

13. Assisting Students in Improving Their Basic Skills (7),

14. Teaching Adults (7),

15. Curriculum Development (8),

16. Discipline (1),

17. Leadership (1),

18. Computers (1),

19. Health Care Roles (1),

20. Gerontology/Geriatrics

21. Legal Aspects (1), and

22. Articulation (1).

Fifteen of the categories (1-15) included as competencies were obtained from the Center for Vocational Education at The Ohio State University (Cotrell, Bennett, Cameron, Chase, Molnar, & Wilson, 1971). These competencies were developed by the Center when charged with the responsibility for finding ways to improve vocational teacher preparation. Research at the Center determined that these competencies were necessary for a valid vocational teacher education program. Seven additional categories of competencies (16-22) were identified through an extensive review of the literature. Parts 4 and 5 included two questions having theoretical implications to identify other health care competency and inservice needs, respectively.

Instrument validity. The validation procedure for development of the list of competencies obtained from the Center for Vocational Education at The Ohio State University included three major

phases. These three major phases of the research and development of the performance-based vocational education materials were (a) identification of important teaching competencies (research based), (b) development of curricular materials, and (c) testing and revision of materials" (Hamilton & Quinn, 1977, p. 43).

Modules were designed for all 384 professional competencies. They were field tested in three institutions where both pre-service and inservice teachers and their instructors provided feedback. Over 2000 teachers and 300 instructors of those teachers were involved. The list of competencies (a) were compared to other lists, (b) were given to educators at many levels who rated the importance of each competency, (c) were subjected to Q-sort and Delphi techniques and/or, (d) were confirmed by the literature. The list of competencies was reduced by including only those competencies which received critical incident support (Norton, Harrington, & Gill, 1978).

To develop the questionnaire the researchers used the competencies developed at the Center for Vocational Education at The Ohio State University, seven additional competencies identified in the literature, overall competency statements for the 22 categories and two items to identify competency and inservice needs. The questionnaire was submitted to a panel of peers for review and consensus to establish face validity. The final instruments received 100% agreement from all members of the panel.

Reliability of instrument. The reliability of the 155 competencies listed in 15 of the 22 categories (items 1-15) used in this study which were developed by the Center for Vocational Education at The Ohio State University was determined by a test-retest method. The BMD03D was used to obtain the Pearson Product-moment Correlation Coefficients. The correlations of scores by clusters ranged from .45 to .71. The individual competency correlations ranged from -.26 to .86.

Data Collection

In order to collect the data for the present study, the researchers distributed a packet of materials including a cover letter from the HOE State Specialist, the researchers and the teacher educator at Auburn University, a questionnaire, and a consent form. The teachers were instructed to circle the option corresponding to the appropriate answer in items 1-45. For items 46-207 the teachers

were asked to rate their perceived competence on each skill by using the following competency rating scale (Figure 1). The Likert scale was assumed to be ordinal. Parts 4 and 5 asked for the teachers to identify other health care competency and inservice needs.

COMPETENCY RATING SCALE

1 = MINIMAL: Minimal level of competency

2 = BELOW AVERAGE: Below average level of competency

3 = AVERAGE: Average level of competency

4 = ABOVE AVERAGE: Above average level of competency

5 = HIGH: High level of competency

Figure 1. Competency Rating Scale

The consent form included in the packet explained to the teachers that: (a) there were no psychological or physical risks identified, and (b) participant confidentiality was assumed. In addition the results of the study would be provided if requested.

Sixty-four (82%) of the 78 teachers completed the questionnaire during a professional development conference for HOE teachers. The teachers (14) who did not attend the conference were mailed the packet of materials.

Data Analysis

Data from the instruments were statistically analyzed using descriptive techniques. More specifically, frequency and percentage distributions, and reliability were computed.

Results and Discussion

Research Question No. 1

What are the selected demographic characteristics of teachers who are teaching in health occupations programs?

From the population of 78 HOE teachers, 75 (96%) responded to the questionnaires. The majority (n=74; 98.7%) worked full-time and 60 (80%) had received tenure. Two, or 2.7% were males and 73, or 97.3%, were females. Forty-five (60%) worked primarily in area vocational centers (AVCs); 28 (37.3%) in comprehensive high schools and 1 (1.3%) in a school considered to be both an AVC and a comprehensive high school. Forty-two (56%) held basic American Red Cross certifications for HOE Teachers. Thirty-eight (50.7%) held Instructor Certifications in American Red Cross First Aid, Adult CPR, Child CPR, and Infant CPR.

In addition to the 22 categories of competencies and the items related to specific inservice topics, were several items dealing with age, years of work experience in the health field, years of teaching experience, professional title, and current educational status.

Age. The ranges in age of the HOE teachers are shown in Table 1. Thirty-two (42.7%) were between the ages of 31 and 40. Twenty-four (32%) were between 41 and 50 years of age. Only 4 (5.3%) were younger than 30 and one was older than 60 years of age.

Table 1

Age of HOE Teachers

Age Range	Frequency	Percent
21-30	4	5.3
31-40	32	42.7
41-50	24	32.0
51-60	14	18.7
over 60	1	1.3

Years of work experience in health field. The number of years of work experience in the health field, other than teaching experience, is reported in Table 2. Nineteen (25.3%) of the HOE teachers

reported having had 4-7 years of work experience with the same number having had 16 or more years work experience.

Table 2

Years of Work Experience in the Health Field, Other Than Teaching

Years of Work Experience	Frequency	Percent
0-3	10	13.3
4-7	19	25.3
8-11	15	20.0
12-15	12	16.0
16 plus	19	25.3

Years of teaching experience. As may be observed in Table 3, the number of years the HOE teachers have been employed in teaching HOE are varied. These data revealed that 30 (40%) of the HOE teachers reported having had 8-11 years of teaching experience, and 25 (33.4%) having had 12 years or more of teaching experience.

Professional title. The professional titles of the HOE teachers are shown in Table 4. Sixty-two (82.7%) reported having the professional title of teacher; six (8%) held the title of coordinator; and seven (9.3%) held the dual title of teacher/coordinator.

Current educational status. The current educational status of the HOE teachers is reported in Table 5. Seventeen (22.7%) were currently working toward a degree and five (6.7%) were working toward certification. Fifty-two (69.3%) were not involved in formal education.

Educational level of HOE teachers. Several items in the survey instrument pertained to the educational background of the HOE teachers. The degrees of the respondents ranged from associate to doctoral degrees. The frequency and percentage distributions are reported in Table 6.

Table 3

Years of Teaching Experience of the HOE Teachers

Years of Teaching	Frequency	Percent
0-3	9	12.0
4-7	11	14.7
8-11	30	40.0
12-15	20	26.7
16 plus	5	6.7

Table 4

Professional Title of HOE Teachers

Professional Title	Frequency	Percent
Teacher	62	82.7
Coordinator	6	8.0
Teacher/ Coordinator	7	9.3

Table 5

Current Educational Status of HOE Teachers

Educational Status	Frequency	Percent
Working toward degree	17	22.7
Working toward certification	5	6.7
Nondegree student	1	1.3
Not involved in formal education	52	69.3

Table 6

Educational Levels of Sample

Degree	Frequency	Percent
Associate in Arts	1	1.3
Associate in Science		
Nursing	14	18.7
Biology & Chemistry	1	1.3
EMT	1	1.3
Dental Hygiene	2	2.7
Baccalaureate (HOE)	12	16.0
Baccalaureate (other than HOE)		
Nursing	20	26.7
Nursing Education	1	1.3
Medical Technology	2	2.7
Health, PE/Biology	1	1.3
Health, PE, Recreation	2	2.7
Health Education	1	1.3
Psychology	1	1.3
Sociology	2	2.7
Pathology	1	1.3
Interdisc/Human Services	1	1.3
Home Economics	1	1.3
Professional Arts	1	1.3
Social Studies	1	1.3
Masters (HOE)	10	13.3
Masters (other than HOE)		
Health	2	2.7
Rehab Counseling	2	2.7
Community Counseling	1	1.3
School Counseling	1	1.3
Ed. Leadership	1	1.3
Business	1	1.3
Ed. Spec. (other than HOE)	1	1.3
Doctoral (HOE)	1	1.3

Nineteen (25.3%) of the teachers held associate degrees. Thirty-five (46.5%) reported having a baccalaureate degree in other fields outside of HOE. Of these, 20 (26.7%) reported having BSN degrees, while only 12 (16%) had obtained baccalaureate degrees in HOE. Ten (13.3%) had Masters degrees in HOE and 8 (10.4%) held Masters degrees in areas other than HOE. One (1.3%) reported having a doctoral degree and 1 (1.3%) had an Education Specialist degree.

Non-degreed health related educational preparation. The health care preparation of the HOE teachers is reported in Table 7. The majority (26 or 34.7%) of the teachers reported having a diploma in nursing.

Table 7

Health Related Educational Preparation

Major	Frequency	Percent
LPN	5	6.7
Diploma (Nursing)	26	34.7
Pathology Assistant	1	1.3
CDA	1	1.3
EMT-Basic	1	1.3
EMT II	1	1.3
Paramedic	2	2.7

Certification. The type of teacher certification held by the HOE teachers is presented in Table 8. Fifty-one (68%) of the teachers reported having a Type I Certificate.

Licensure/certification. The specific types of licensure/certification obtained by the teachers are shown in Table 9. Fifty-five (73.7%) were licensed as RN's.

Interest in HOE degree. The interest of the HOE teachers in obtaining a HOE degree and the level of degrees desired is indicated in Table 10. Thirty-four (45.3%) expressed an interest in a HOE degree. Twenty (26.7%) were interested in a HOE baccalaureate degree, 18 (24%) in the non-traditional HOE Masters degree (fifth year degree), 17 (22.7%) in a traditional HOE Masters degree, 14 (18.7%) in a HOE Education Specialist degree, 10 (13.3%) in the HOE AA certification, and 5 (6.7%) in the doctoral degree. However, the AA Certification program was not available in Alabama at the time of the present study.

Table 8

Teacher Certification

Certification	Frequency	Percent
Class B (HOE)	6	8.0
Class B or other Baccalaureate degree (other than HOE)		
Nursing	1	1.3
Health	4	5.3
Home Ec.	1	1.3
Education	1	1.3
Class A (HOE)	9	12.0
Class AA (HOE)	1	1.3
Type I (HOE)	51	68.0
(non-professional equivalent Masters Degree)		
Type II (HOE)	10	13.3
Type II (other than HOE)	1	5.3
Type III (HOE)	4	5.3

Preference for attending class. The HOE teachers' preferences for class scheduling is shown in Table 11. Forty-three (57.3%) preferred daytime classes in the summer, 36 (48%) preferred classes on Friday night and/or Saturday, and 21 (28%) preferred classes be held on Friday night, Saturday, and Sunday.

Preference for class location. The preference of the HOE teachers for class location is reported in Table 12. Thirty-one (41.3%) of the teachers

Table 9

Licensure/Certification in Health Care Held by HOE Teachers

Licensure/Certification	Frequency	Percent
RN	55	73.7
MT	2	2.7
EMT (I or II)	5	6.7
LPN	5	6.7
Paramedic	1	1.3
CMA-C	2	2.7
RDH	2	2.7
CDA	1	1.3
OB-GYN Nurse Practitioner	1	1.3
Pathology Assistant	1	1.3

preferred classes to be held in Birmingham, 26 (34%) preferred Auburn, 25 (33.3%) preferred Montgomery, and 11 (14.7%) preferred Cullman.

Research Question No. 2

How do the HOE teachers rate their competence on selected teaching competencies? The instrument addressed 161 competency statements in 22 categories, including an overall competency rating in each category. The frequency and percentage distribution of responses are shown in Table 13.

Research Question No. 3

What health care update skills are needed by HOE teachers?

The teachers indicated a need for updating specific skills in health care areas. These skills areas are reported in Table 14. Priority topics included radiography (n = 35; 46.7%), medical laboratory techniques (n = 33; 44%), medical records (n = 23; 30.7%), and dental assisting (n = 20; 26.6%).

Table 10

Interest in HOE Degrees

Degree	Frequency	Percent
HOE degree		
Yes	34	45.3
No	37	49.3
Baccalaureate Degree		
Yes	20	26.7
No	11	14.7
Fifth Year Degree		
Yes	18	24.0
No	8	10.7
Master's Degree		
Yes	17	22.7
No	14	18.7
Education Specialist Degree		
Yes	14	18.7
No	17	22.7
AA Certificate		
Yes	10	13.3
No	18	24.0
Doctoral Degree		
Yes	5	6.7
No	18	24.0

Table 11

Class Schedule Preference

Schedule	Frequency	Percent
Daytime during week (Summer)		
Yes	43	57.3
No	6	8.0
Nighttime during week (Sept.-May)		
Yes	17	22.7
No	27	36.0
Friday night, Saturday		
Yes	36	48.0
No	10	13.3
Friday night, Saturday, Sunday		
Yes	21	28.0
No	21	28.0

Table 12

Class Location Preferences

Location	Frequency	Percent
Auburn		
Yes	26	34.7
No	18	24.0
Montgomery		
Yes	25	33.3
No	18	24.0
Dothan		
Yes	3	4.0
No	32	42.7
Evergreen		
Yes	8	10.7
No	29	38.7
Birmingham		
Yes	31	41.3
No	14	18.7
Cullman		
Yes	11	14.7
No	24	32.0

Table 13

Frequency And Percentage Distrucution Of Teacher

Responses To Competency Statements

Competency Statement	Minimal Freq/%	Below Average Freq/%	Average Freq/%	Above Average Freq/%	High Freq/%
Program Planning, Development And Evaluation					
46. Prepare for a community survey	1/1.3	3/4.0	39/52.0	26/34.7	5/6.7
47. Conduct a community survey	1/1.3	3/4.0	38/50.7	28/37.3	5/6.7
48. Report the findings of a community survey	1/1.3	5/6.7	37/49.3	28/37.3	4/5.3
49. Organize an occupational advisory committee		2/2.7	26/34.7	32/42.7	15/20.0
50. Maintain an occupational advisory committee		2/2.7	26/34.7	32/42.7	15/20.0
51. Develop program goals and objectives	1/1.3		28/37.3	30/40.0	16/21.3
52. Conduct an occupational analysis	2/2.7	6/8.0	38/50.7	20/26.7	8/10.7
53. Develop a course of study	1/1.3	1/1.3	28/37.3	31/41.3	14/18.7
54. Develop a long-range program plans		2/2.7	27/36.0	32/42.7	13/17.3
55. Conduct a student follow-up study		1/1.3	30/40.0	29/38.7	14/18.7
56. Evaluate your vocational program		1/1.3	26/34.7	36/48.0	12/16.0
57. Based on the factors above, my overall rating of competence in Program Planning, Development and Evaluation is:		1/1.3	29/38.7	36/48.0	7/9.3
Instructional Planning					
58. Determine needs and interests of students			22/29.3	40/53.3	13/17.3
59. Develop student performance objective	1/1.3		17/22.7	43/57.3	14/18.7
60. Develop a unit of instruction			16/21.3	42/56.0	17/22.7
61. Develop a lesson plan			14/18.7	42/56.0	19/25.3
62. Select student instructional materials			17/22.7	40/53.3	18/24.0
63. Prepare teacher-made instructional materials			20/26.7	43/57.3	12/16.0
64. Based on the factors above, my overall rating of competence in Instructional Planning is:			13/17.3	39/52.0	23/30.7
instructional Execution					
65. Direct field trips		4/5.3	26/34.7	29/38.7	16/21.3
66. Conduct group discussions, panel discussions and symposiums	1/1.3	3/4.0	28/37.3	28/37.3	20/20.0
67. Employ brainstorming, buzz group, and question box techniques		1/1.3	26/34.7	32/42.7	16/21.3
68. Direct students in instructing other students			22/29.3	36/48.0	17/22.7
69. Employ simulation techniques			22/29.3	36/48.0	17/22.7
70. Guide student study			22/29.3	34/45.3	19/25.3
71. Direct student laboratory experience		1/1.3	22/29.3	33/44.0	18/14.0
72. Direct students in applying problem-solving techniques		2/2.7	32/42.7	25/33.3	16/21.3
73. Employ the project method	2/2.7		38/50.7	24/32.0	11/14.7
74. Introduce a lesson			15/20.0	37/49.3	23/30.7
75. Summarize a lesson			15/20.0	36/48.0	24/32.0
76. Employ oral questioning techniques		1/1.3	17/22.7	34/45.3	23/30.7
77. Employ reinforcement techniques		1/1.3	18/24.0	36/48.0	20/26.7
78. Provide instruction for slower and more capable learners	1/1.3	1/1.3	28/37.3	31/41.3	14/18.7
79. Present an illustrated talk		1/1.3	19/25.3	38/50.7	16/21.3

(table continues)

Competency Statement	Minimal Freq/%	Below Average Freq/%	Average Freq/%	Above Average Freq/%	High Freq/%
Instructional Execution					
80. Demonstrate a manipulative skill			17/22.7	36/48.0	22/29.3
81. Demonstrate a concept or principle			23/30.7	33/44.0	18/24.0
82. Individualize instruction		5/6.7	24/32.0	31/41.3	14/18.7
83. Employ the team teaching approach	2/2.7	2/2.7	31/41.3	30/40.0	8/10.7
84. Use subject matter experts to present information			21/28.0	37/49.3	17/22.7
85. Prepare bulletin boards and exhibits		1/1.3	30/40.0	26/34.7	18/24.0
86. Present information with models, real objects and flannel boards		2/2.7	21/28.0	30/40.0	22/29.3
87. Present information with overhead and opaque materials	1/1.3	1/1.3	20/26.7	37/49.3	
88. Present information with filmstrips and slides		15/20.0	34/45.3	26/34.7	
89. Present information with films			17/22.7	36/48.0	22/29.3
90. Present information with audio recordings		3/4.0	20/26.7	35/46.7	16/21.3
91. Present information with televised and videotaped materials			15/20.0	37/49.3	21/28.0
92. Employ programmed instruction	1/1.3	1/1.3	29/38.7	29/38.7	14/18.7
93. Present information with the chalkboard and flip chart		1/1.3	20/26.7	35/46.7	19/25.3
94. Provide for students' learning styles		2/2.7	27/36.0	36/48.0	8/10.7
95. Based on the factors above, my overall rating of competence in Instructional Execution is:			22/29.3	37/49.3	16/21.3
Instructional Evaluation					
96. Establish student performance criteria			34/45.3	31/41.3	10/13.3
97. Assess student performance: Knowledge			21/28.0	36/48.0	17/22.7
98. Assess student performance: Attitudes		2/2.7	28/37.3	32/42.7	13/17.3
99. Assess student performance: Skills			18/24.0	39/52.0	18/24.0
100. Determine student grades			17/22.7	33/44.0	25/33.3
101. Evaluate your instructional effectivness	1/1.3	17/22.7	41/54.7	14/18.7	
102. Based on the factors above, my overall rating of competence in Instructional Evaluation is:			20/26.7	42/54.0	13/17.3
Instructional Management					
103. Project instructional resource needs	1/1.3	4/5.3	30/40.0	30/40.0	10/13.3
104. Manage your budgeting and reporting responsibilities	2/2.7	3/4.0	30/40.0	28/37.3	12/16.0
105. Arrange for improvement for your vocational facilities	2/2.7	4/5.3	26/34.7	33/44.0	10/13.3
106. Maintain a filing system		2/2.7	34/45.3	26/34.7	13/17.3
107. Provide for student safety			12/16.0	36/48.0	27/36.0
108. Provide for the first aid needs of students			18/24.0	31/41.3	26/34.7
109. Assist student in developing self-discipline		3/4.0	24/32.0	36/48.0	12/16.0
110. Organize the vocational laboratory			24/32.0	36/48.0	15/20.0
111. Manage the vocational laboratory		1/1.3	25/33.3	34/45.3	13/17.3
112. Combat problems of student chemical use	1/1.3	3/4.0	33/44.0	28/37.3	10/13.3

(table continues)

Competency Statement	Minimal Freq/%	Below Average Freq/%	Average Freq/%	Above Average Freq/%	High Freq/%
Instructional Management					
113. Based on the factors above, my overall rating of competence in Instructional Management is:			31/41.3	35/46.7	8/10.7
Guidance					
114. Gather student data using formal data-collection techniques	2/2.7	6/8.0	42/56.0	17/22.7	8/10.7
115. Gather student data through personal contacts	1/1.3	1/1.3	34/45.3	28/37.3	11/14.7
116. Use conferences to help meet student needs	1/1.3	2/2.7	25/33.3	32/42.7	15/20.0
117. Provide information on educational and career opportunities	1/1.3		15/20.0	38/50.7	21/28.0
118. Assist students in applying for employment or further education	1/1.3		17/22.7	32/42.7	25/33.3
119. Based on the factors above, my overall rating of competence in Gudiance is:	1/1.3		24/32.0	37/49.3	13/17.3
School-Community Relations					
120. Develop a school-community relations plan for your vocational program		2/2.7	30/40.0	33/44.0	10/13.3
121. Give presentations to promote your vocational program		2/2.7	25/33.3	34/45.3	14/18.7
122. Develop brochures to promote your vocational program	1/1.3	4/5.3	31/41.3	22/29.3	17/22.7
123. Prepare displays to promote your vocational program	1/1.3		30/40.0	31/41.3	13/17.3
124. Prepare news releases and articles concerning your vocational program		3/4.0	27/36.0	29/38.7	16/21.3
125. Arrange for television and radio	9/12.0	13/17.3	18/24.0	11/14.7	4/5.3
126. Conduct an open house	4/5.3	7/9.3	26/34.7	27/36.0	10/13.3
127. Work with members of the community		1/1.3	25/33.3	30/40.0	19/25.3
128. Work with state and local educators			25/33.3	34/45.3	16/21.3
129. Obtain feedback about your vocational program	1/1.3		29/38.7	34/45.3	10/13.3
130. Based on the factors above, my overall rating of competence in School-Community Relations is:		1/1.3	32/42.7	32/42.7	10/13.3
Student Vocational Organization					
131. Develop a personal philosophy concerning student vocational organizations	1/1.3	3/4.0	26/34.7	30/40.0	15/20.0
132. Establish a student vocational organization	1/1.3	4/5.3	17/22.7	31/41.3	22/29.3
133. Prepare student vocational organization members for leadership roles	1/1.3	3/4.0	25/33.3	29/38.7	17/22.7
134. Assist student vocational organization members in developing and financing a yearly program of activities	1/1.3	3/4.0	26/34.7	28/37.3	17/22.7

(table continues)

Competency Statement	Minimal Freq/%	Below Average Freq/%	Average Freq/%	Above Average Freq/%	High Freq/%
Student Vocational Organization					
135. Supervise activities of the student vocational organization	1/1.3	3/4.0	19/25.3	30/40.0	22/29.3
136. Guide participation in student vocational organization contests	1/1.3	3/4.0	23/30.7	29/38.7	19/25.3
137. Based on the factors above, my overall rating of competence in Student Vocational Organization is:	1/1.3	3/4.0	24/32.0	29/38.7	18/24.0
Professional Role And Development					
138. Keep up-to-date professionally			22/29.3	34/45.3	19/25.3
139. Serve your teaching profession		3/4.0	18/24.0	36/48.0	18/24.0
140. Develop an active personal philosophy of education		1/1.3	25/33.3	34/45.3	15/20.0
141. Serve the school and community			16/21.3	37/49.3	22/29.3
142. Obtain a suitable teaching position			23/30.7	32/42.7	20/26.7
143. Provide laboratory experiences for prospective teachers (assist University with interns)	22/29.3	10/13.3	24/32.0	11/14.7	8/10.7
144. Plan the student teaching experience (interns)	20/26.7	12/16.0	24/32.0	12/16.0	7/9.3
145. Supervise student teachers (interns)	25/33.3	9/12.0	24/32.0	12/16.0	5/6.7
146. Based on the factors above, my overall rating of competence in Professional Role and Development is:	4/5.3	8/10.7	34/45.3	22/29.3	7/9.3
147. Establish guidelines for your cooperative vocational program	23/30.7	3/4.0	27/36.0	19/25.3	3/4.0
148. Manage the attendance, transfers, and terminations of co-op students	22/29.3	5/6.7	27/36.0	14/18.7	6/8.0
149. Enroll students in your co-op program	24/32.0	3/4.0	30/40.0	11/14.7	7/9.3
150. Secure training stations for your co-op program	24/32.0	2/2.7	28/37.3	13/17.3	8/10.7
151. Place co-op students on the job	22/29.3	2/2.7	26/34.7	17/22.7	8/10.7
152. Develop the training ability of on-the job instructors	26/34.7	6/8.0	25/33.3	10/13.3	7/9.3
Coordination Of Cooperative Education					
153. Coordinate on-the-job instruction	27/36.0	6/8.0	23/30.7	12/16.0	7/9.3
154. Evaluate co-op students on-the-job performance	26/34.7	1/1.3	25/33.3	15/20.0	8/10.7
155. Prepare for students' related instruction	24/32.0	2/2.7	22/29.3	20/26.7	7/9.3
156. Supervise an employer-employee appreciation event	22/29.3	2/2.7	21/28.0	16/21.3	10/13.3
157. Based on the factors above, my overall rating of competence in Coordination of Cooperative Education is:	21/28.0	8/10.7	24/32.0	13/17.3	7/9.3
Implementing Competency-Based Education (CBE)					
158. Prepare yourself for CBE	1/1.3	5/6.7	34/45.3	30/40.0	5/6.7

(table continues)

Competency Statement	Minimal Freq/%	Below Average Freq/%	Average Freq/%	Above Average Freq/%	High Freq/%
Implementing Competency-Based Education (CBE)					
159. Organize the content for a CBE program	1/1.3	6/8.0	33/44.0	30/40.0	5/6.7
160. Organize your class and lab to install CBE	2/2.7	5/6.7	34/45.3	28/37.3	6/8.0
161. Provide instructional materials for CBE	2/2.7	5/6.7	29/38.7	32/42.7	7/9.3
162. Manage the daily routines of your CBE program	2/2.7	4/5.3	33/44.0	30/40.0	6/8.0
163. Guide your students through the CBE program	3/4.0	4/5.3	30/40.0	30/40.0	7/9.3
164. Based on the factors above my overall rating of competence in Implementing Competency-Based Education is:	2/2.7	5/6.7	32/42.7	30/40.0	5/6.7
Serving Students With Special/ Exceptional Needs					
165. Prepare yourself to serve exceptional students	2/2.7	7/9.3	41/54.7	17/22.7	8/10.7
166. Identify and diagnose exceptional students	1/1.3	9/12.0	43/57.3	17/22.7	5/6.7
167. Plan instruction for exceptional students		9/12.0	38/50.7	19/25.3	9/12.0
168. Provide appropriate instructional materials for exceptional students		8/10.7	42/56.0	16/21.3	8/10.7
169. Modify the learning environment for exceptional students		9/12.0	39/52.0	19/25.3	8/10.7
170. Promote peer acceptance of exceptional students		6/8.0	37/49.3	24/32.0	8/10.7
171. Use instructional techniques to meet the needs of exceptional students		5/6.7	40/53.3	22/29.3	8/10.7
172. Improve your communication skills		2/2.7	40/53.3	27/36.0	6/8.0
173. Assess the progress of exceptional students		8/10.7	41/54.7	20/26.7	6/8.0
174. Counsel exceptional students with personal-social problems		5/6.7	40/53.3	23/30.7	7/9.3
175. Assist exceptional students in developing career planning skills		6/8.0	42/56.0	19/25.3	8/10.7
176. Prepare exceptional students for employability		10/13.3	38/50.7	20/26.7	7/9.3
177. Promote your vocational program with exceptional students	1/1.3	10/13.3	37/49.3	21/28.0	5/6.7
178. Based on the factors above, my overall rating of competence in Serving Students with Special/ Exceptional Needs is:		6/8.0	41/54.7	22/29.3	6/8.0
Assisting Students In Improving Their Basic Skills					
179. Assist students in achieving basic reading skills	4/5.3	7/9.3	44/58.7	15/20.0	5/6.7
180. Assist students in developing technical reading skills	2/2.7	9/12.0	42/56.0	18/24.0	4/5.3
181. Assist students in improving their writing skills	2/2.7	9/12.0	42/56.0	19/25.3	3/4.0

(table continues)

Competency Statement	Minimal Freq/%	Below Average Freq/%	Average Freq/%	Above Average Freq/%	High Freq/%
Assisting Students In Improving Their Basic Skills					
182. Assist students in improving their oral communications skills	2/2.7	5/6.7	38/50.7	26/34.7	4/5.3
183. Assist students in improving their math skills	2/2.7	12/16.0	36/48.0	19/25.3	6/8.0
184. Assist students in improving their survival skills	2/2.7	4/5.3	36/48.0	28/37.3	5/6.7
185. Based on the factors above, my overall rating of competence in Assisting Students in Improving Their Basic Skills is:		8/10.7	42/56.0	20/26.7	4/5.3
Teaching Adults					
186. Prepare to work with adult learners	8/10.7	5/6.7	29/38.7	22/29.3	11/14.7
187. Market the adult education program	10/13.3	7/9.3	32/42.7	16/21.3	10/13.3
188. Determine individual training needs	9/12.0	7/9.3	31/41.3	17/22.7	11/14.7
189. Plan instruction for adults	9/12.0	5/6.7	28/37.3	20/26.7	13/17.3
190. Manage the instructional process	9/12.0	6/8.0	27/36.0	21/28.0	12/16.0
191. Evaluate the performance of adults	9/12.0	5/6.7	27/36.0	19/25.3	15/20.0
192. Based on the factors above, my overall rating of competence in Teaching Adults is:	9/12.0	5/6.7	29/38.7	20/26.7	12/16.0
Curriculum Development					
193. Developing curriculum goals, objectives and instructional plans	1/1.3	2/2.7	24/32.0	37/49.3	11/14.7
194. Evaluating and using needs assessment and manpower information	1/1.3	2/2.7	35/46.7	29/38.7	7/9.3
195. Preparing for curriculum change	1/1.3	1/1.3	26/34.7	35/46.7	12/16.0
196. Organizing instructional strategies	1/1.3	2/2.7	28/37.3	36/48.0	8/10.7
197. Preparing instructional materials	1/1.3	1/1.3	25/33.3	37/49.3	11/14.7
198. Curriculm evaluation	1/1.3		32/42.7	34/45.3	8/10.7
199. Growth and staff development	1/1.3		34/45.3	34/45.3	6/8.0
200. Based on the factors above, my overall rating of competence in Curriculum Development is:	1/1.3		33/44.0	33/44.0	8/10.7
Discipline					
201. My perceived competence is providing discipline is:		4/5.3	30/40.0	28/37.3	13/17.3
Leadership					
202. My perceived competence in leadership skills is:			25/33.3	34/45.3	16/21.3
Computers					
203. My perceived competence in using computers in the classroom is:	2/2.7	13/17.3	38/50.7	18/24.0	4/5.3

(table continues)

Competency Statement	Minimal Freq/%	Below Average Freq/%	Average Freq/%	Above Average Freq/%	High Freq/%
Roles					
204. My perceived competence in understanding the roles of allied health personnel, nurses, and health practitioners is:			12/16.0	38/50.7	25/33.3
Gerontology/Geriatrics					
205. My perceived competence in gerontology/geriatrics is:		2/2.7	20/26.7	35/46.7	18/24.0
Legal Aspects					
206. My perceived competence in legal aspects/teacher liability is:		4/5.3	27/36.0	35/46.7	9/12.0
Articulation					
207. My perceived competence in articulating high school programs with post-secondary programs is:	3/4.0	6/8.0	38/50.7	24/32.0	4/5.3

Table 14

Frequency And Percentage Distribution Of Teacher Responses To Needs For Health Care Update Skills

Health Care Skill	Frequency	Percent
Radiography	35	46.7
Medical Laboratory Techniques	33	44.0
EKG/ECG	6	8.0
Dental Assisting	20	26.6
Physical Therapy	2	2.7
Medical Records	23	30.7
Respiratory Therapy	2	2.6
Medical Assisting	7	9.2
Optical Assisting	1	1.3
Home Health Aid	1	1.3
Veterinary Assisting	3	4.0

Research Question No. 4

What inservice topics are needed by HOE teachers?

The teachers were asked to indicate additional areas of inservice needs. The variety of topics with a frequency and percentage distribution of responses are shown in Table 15. The priority topics included learning how to use computers (n = 11; 14.7%) and organizing a HOSA Chapter (n = 8; 10.6%).

Table 15

Frequency And Percentage Distribution Of Teacher Responses To Inservice Topics Needs

Inservice Topics	Frequency	Percent
Veterinary Basic Skills	1	1.3
Health Career Knowledge	2	2.7
Clinical Rotations	3	3.9
Microbiology	2	2.7
Lesson Implementation	1	1.5
Special Needs	1	1.3
Individualized Instruction	1	1.3
Dental Assisting	1	1.3
Medical Assisting	1	1.3
New Competitive Events	1	1.3
Organization of HOSA	8	10.6
Parliamentary Procedures	2	2.7
Math	1	1.3
Chemistry	1	1.3
Sharing of Ideas	3	4.0
Computers	11	14.7
New Equipment	2	2.7
Surgical Technician	1	1.3
Bulletin Board Ideas	1	1.3
Monitors	1	1.3
Discipline	2	2.7
Radiography	3	4.0
Medical Laboratory	1	1.3
Legal Issues	1	1.3
Medical Records	1	1.3
Articulation	1	1.3
Job Placement	1	1.3
Exam Preparation	1	1.3

Conclusions and Recommendations

It appears that the majority of the HOE teachers participating in the study were female, over age 31, health care practitioners with eight or more years of work experience (61.3%) and eight or more years of teaching experience (73.4%), and were teaching in an area vocational center. Only 17 of the teachers were involved in seeking a degree, however, a high percentage were interested in pursuing further education in HOE either at the baccalaureate or higher level, even though 68% held the non-professional equivalent masters degree and 73.7% were registered nurses. Most preferred to attend day classes during summer (57.3%) and weekend classes (76%) during the academic year.

When teachers were requested to rate their competence on selected teaching competencies, the majority of teachers perceived themselves as having average or above competence in most of the areas. It appears that the highest percentage of competencies that were perceived to be below average or minimal were:

1. Arranging for T. V. and radio (22 or 29%),
2. Evaluating instructional effectiveness, (18 or 24%),
3. Presenting information with filmstrips and slides (15 or 20%),
4. Using computers (15 or 20%),
5. Assisting students to improve math skills (14 or 18.7%),
6. Promoting program for exceptional students (11 or 14.6%),
7. Preparing exceptional students for employment (10 or 13.3%).

In relation to teaching adult education (which is required for all secondary teachers to maintain their teacher certification), 13 (17.4%) to 17 (22.6%) of the teachers were of the opinion that their competence was either minimal or below average and 22 (29.3%) to 27 (36%) perceived their competence in coordination of cooperative education was minimal or below average. Another area, encompassing professional role and development, included perceptions of minimal or below competence in assisting University teacher educators with laboratory experiences for prospective HOE teachers (32 or 42.6%), planning student teaching experiences (32 or 42.6%), and supervising student teachers (34 or 45.3%).

The highest percentage of needs for update-skill areas were perceived to be radiography (35 or

46.7%), medical laboratory techniques (33 or 44%), medical records (23 or 30.7%), and dental assisting (20 or 26.6%). The priority topics identified for inservice needs were how to use computers (11 or 14%) and organizing a HOSA chapter (8 or 10.6%).

Based on the results and conclusions, the authors recommend that:

1. Educational programs for obtaining higher degrees be planned and scheduled to meet the needs of the HOE teachers.
2. Courses or inservice programs be planned to encompass the below average or minimal competencies identified by the teachers.
3. Update-skills opportunities be provided for the teachers in the areas of need.
4. Inservice programs be planned to encompass use of computers and how to organize a HOSA chapter.
5. Research be continued as an on-going process to identify competencies needed by teachers.

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THE RELATIONSHIP BETWEEN COGNITIVE STYLE IN MATHEMATICS AN DRUG DOSAGE CALCULATION ABILITY OF BACCALAUREATE NURSING STUDENTS

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THE RELATIONSHIP BETWEEN COGNITIVE STYLE IN MATHEMATICS AND DRUG DOSAGE CALCULATION ABILITY OF BACCALAUREATE NURSING STUDENTS

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Abstract: This study measured the cognitive style in mathematics of nursing students to determine if there was a correlation with drug dosage calculation ability. The sample consisted of 66 students enrolled in the junior year of an upper division nursing program at a large public university. The Test of Cognitive Style in Mathematics was administered to each student. Student scores were placed on a continuum where the left side represented analytic, step-by-step, sequential processing (left-hemispheric dominance) and the right side represented global, simultaneous, all-at-once processing (right-hemispheric dominance). A 20-item test was administered to measure dosage calculation ability. The findings indicated a significant positive correlation ($r=0.41$, $p=.0011$) between cognitive style in mathematics and drug dosage calculation ability. Students who used global, simultaneous, all-at-once processing were more likely to obtain higher scores on the drug dosage calculation test than those students who used analytic, step-by-step processing.

Background

A critical skill for practicing nurses is the ability to calculate drug dosages accurately. A review of published research indicates that many students are unable to accurately calculate medication dosages because they are deficient in basic mathematical ability. Dexter and Applegate (1980) reported that associate degree nursing students had difficulty completing dosage calculation problems

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in the clinical setting because students lacked mathematical skills.

Baccalaureate student nurses have performed poorly in dosage calculation studies. Ptaszynski and Silver (1981) administered a dosage calculation test to 73 baccalaureate student nurses. While the minimum passing score was 90%, no student scored higher than 80% and the majority scored lower than 70%. In another study of baccalaureate student nurses (Timpke and Janney, 1981), 39% of the sample did not obtain a minimum passing score of 90% correct on a dosage calculation test. Both studies reported poor dosage calculation ability was due to poor mathematical skills.

Practicing nurses also have difficulty with drug dosage calculations. Bayne and Bindler (1988) reported of 62 nurses studied, only 35% could pass a dosage calculation test at a 90% or higher level. Again, poor mathematical skills were blamed.

In a review of 223 NLN accredited programs in nursing throughout the United States, 82% reported that many students were deficient in mathematical skills. Of these programs 67% reported that 11-50% of their students were deficient in basic mathematics while 16% of the programs reported that more than half of their students were deficient in mathematics (Worrell and Hodson, 1989).

Bath and Blais (1991) analyzed the mathematical skills of baccalaureate nursing students with an emphasis on conceptual ability. Only seven students passed a dosage calculation test although each had completed instruction in dosage calculations during the previous semester. Analysis of student errors indicated faulty mathematical computation represented only 19% of the total student errors. converting between measurement systems caused 13% of the errors. Most errors (68%) were conceptual; that is, the students did not know how to set up the problem or in what form to administer the medication.

Cognitive style: Many researchers suggest there may be two styles of mathematics learning (Hart, 1976; Krutetskii, 1976; and Polya, 1962). Grow and Johnson (1983) discussed two distinct learning styles: (1) the rational mode in which the students learn formulae but are unaware of the underlying concepts and logic that give meaning to what they do; and (2) the productive mode, in which the student visualizes the problem globally to generate an estimate of the answer, but may be too

impulsive to give a precise answer. clinical and experimental evidence supports differential processing in the left and right hemispheres of the brain. The left hemisphere dominant person functions using analytic, focusing on parts, step-by-step sequential, reflective processing. Right hemispheric dominant people tend to use global, focusing on the global, all-at-once, simultaneous, impulsive processing (Miller, 1986).

Zdenek (1983) defined brain lateralization or hemispheric dominance as the learner's preferred hemisphere of control. Franco and Sperry (1977) found that geometry is processed better by the right hemisphere while arithmetic operations such as multiplication and division are processed better by the left hemisphere. Gardner (1983) found that the left hemisphere can read and produce the symbols of mathematics while the right hemisphere understands numerical relations and concepts. Springer (1981) added that all brain functions are important and should be valued.

Herrmann (1981) stated that hemispheric dominance should be viewed as a continuum rather than a dichotomy. Bath, Chinn, and Knox (1986) used a continuum to measure cognitive style in mathematics. The extreme left side of the continuum represented people who display analytic, focusing on the parts, step-by-step, sequential, mathematical problem solving strategies usually requiring paper and pencil. The cognitive style was described with the term 'inchworm'. The right side of the continuum represents people who display global, focusing on the whole, all-at-once, simultaneous, mathematical problem solving strategies usually performed mentally. This cognitive style was described with the term 'grasshopper'. The terms inchworm and grasshopper focus on the observable behaviors instead of unseen neurological causation. The middle of the continuum represented individuals who display the ability to integrate both cognitive styles in mathematical problem solving.

Need for the Study

People solve mathematical problems using different cognitive styles. The nursing literature is abundant with research demonstrating the difficulty students have learning medication dosage calculations. Practicing nurses continue to make errors in their dosage calculations. If it can be demonstrated that there is a correlation between cognitive style in mathematics and dosage calculation

ability, faculty can develop instructional strategies to meet individual learning styles of their to improve dosage calculation ability.

Purpose

The purpose of the study was to explore the relationship between cognitive style in mathematics and drug dosage calculation ability. The following hypothesis was developed for the stated purpose:

1) There is no correlation between cognitive style in mathematics and drug dosage calculation ability.

Methodology

Sample

The sample (n=66) included all upper division nursing students enrolled in the first year courses at a large public university. All participants had completed the first semester nursing courses where instruction in drug dosage calculation and medication administration skills was provided.

Instrumentation

The Test of Cognitive Style in Mathematics (Bath, Chinn, and Knox, 1986) was administered. The test can be administered to a student in about ten minutes. Stability reliability is reported as 0.94. Item validity was reported while item discrimination indexes are significant at the 0.05 level or better.

The investigators constructed and administered a 20-item drug dosage exam, consisting of three types of problems including 8 tablet/capsule questions, 9 oral and injectable solution questions, and 3 intravenous flow rate questions. Four faculty from the school of nursing reviewed the test and confirmed validity. The Spearman Brown formula provided a split half reliability coefficient of 0.92. Students were required to obtain a score of 90% to show proficiency. Researchers have used several levels to demonstrate proficiency. Shockley, McGurn, Gunning, Gravely, and Tillotson (1989) considered 85% passing; Connor and Tillman (1990) required 88%. Most research called for 90% proficiency when evaluating drug dosage calculation abilities of nurses (Chenger, Conklin, Hirst, Reimer, & Watson, 1989; Bayne & Bindler, 1988; Ptaszynski & Silver, 1981; Timpke and Janney, 1981;

and Dexter & Applegate, 1980).

Data Collection

The investigators administered the Test of cognitive Style in Mathematics. Cognitive style scores ranging from 10 to 30 were obtained by analyzing problem processing while each student completed ten problems from two mathematical categories, arithmetic and mental mathematics. Lower numerical scores indicated inchworm processing and scores near 30 indicated grasshopper processing.

Students completed the drug dosage calculation test with no time limit. They were given a table of measurement conversions, but were not permitted to use a calculator. Students had sufficient space and were encouraged to show their work on the test form.

Data Analysis

The Test of Cognitive Style in Mathematics was analyzed to place each student on a continuum. Although cognitive scores were usually analyzed as a continuum, it is sometimes helpful to look at three cognitive styles. Students with scores from 10 to 16 were considered analytic, step-by-step, sequential processors (inchworms). Students scoring 17 to 23 were considered to have integrated both cognitive styles in mathematical processing. Students with scores of 24 to 30 were considered global, simultaneous, all-at-once processors (grasshoppers). Frequency and percentages were calculated for the three different cognitive styles.

The drug dosage calculation test was evaluated with a minimum passing score of 90%. The test grades were then analyzed for frequencies and percentages. Means, standard deviations, and standard errors were calculated for both tests. A correlation coefficient between cognitive style in mathematics and drug dosage calculation ability was determined.

Results

Demographic Data

The students ranged in age from 20 to 38. Of the 66 students, 31 were Hispanic, 17 Caucasian, 16 Black, and 2 Asian. Seven were male. These students had attended elementary and secondary schools in a variety of countries including 53 in The United States, 8 in the Caribbean, 2 in

Africa, 2 in Asia and 1 in the Philippines.

Research Hypothesis

There is no correlation between cognitive style in mathematics and dosage calculation ability. A significant positive correlation was found between the two variables ($r = 0.41$, $p = 0.0011$), therefore, the hypothesis was rejected.

Cognitive style in mathematics results: Most students (55/66 or 83%) displayed analytic, step-by-step, sequential mental processing. Of these 'inchworm' mathematical problem solvers, 22 displayed extreme step-by-step, sequential processing. Some students (9/66 or 14%) showed integrated

Table 1

Frequency and Percentage Distributions of Cognitive Scores

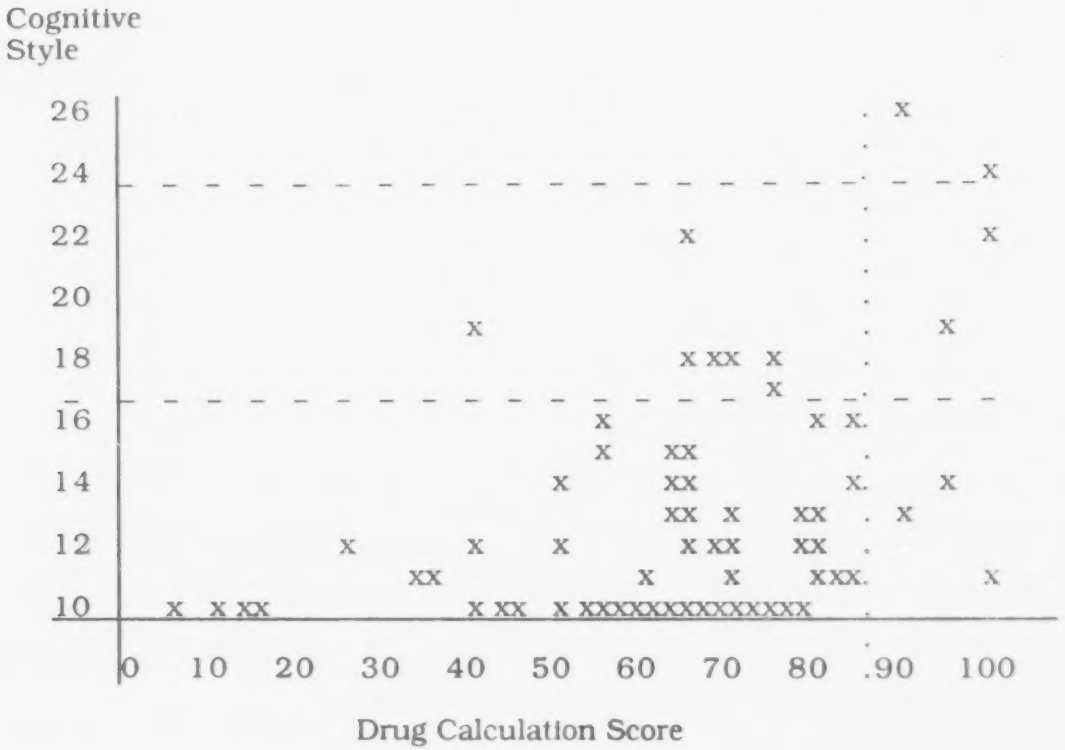
Cognitive Score	Number of Students	Percent of Group (rounded)
step-by-step	10	22	33
sequential	11	7	11
paper & pencil	12	8	12
	13	7	11
	14	5	7
	15	3	5
	16	3	5
	17	1	1
	18	4	6
	19	1	2
	20	1	2
	21	0	0
	22	2	3
	23	0	0
global	24	1	1
all-at-once	25	0	0
simultaneous	26	1	1
mental	27	0	0
	28	0	0
	29	0	0
	30	0	0
		Totals 66	100

mathematical processing and only two students (3%) were classified as 'grasshoppers' displaying global, all-at-once, simultaneous processing (Table 1). Only three of the 55 analytic, step-by-step, sequential processors achieved passing scores (90%) on the drug dosage test. Both global, all-at-once, simultaneous processors passed the test while two of nine (22%) integrated processors could pass the test. Only 3 of 55 part, step-by-step, sequential processors passed the test.

Separate student scores on both the Test of Cognitive Style in Mathematics and the drug dosage calculation test were plotted on a scattergram (Table 2). The higher the score on the Test for Cognitive Style in Mathematics the more likely the participant was to pass the dosage calculation test.

Table 2

Student Cognitive Style and Drug Calculation Scores



Descriptive statistics for both the Test for Cognitive Style in Mathematics and the drug dosage calculation test were calculated (Table 3). The range of scores for the Test for Cognitive Style in Mathematics was 10 to 26. The mean score was 13.2 and the standard deviation was 3.8. Scores on the dosage calculation test ranged from 5 to 100. The mean score was 64.4 and the standard deviation was 21.3. The correlation coefficient for the two tests was $r = +0.41$, $p = 0.0011$.

Table 3

Descriptive Statistics for Dosage Calculation and Cognitive Style

	Mean	St. Dev	N.	St. Error
Dosage Calculation Score	64.4	21.3	66	2.6
Cognitive Style Score	13.2	3.8	66	0.5
Correlation	$r = 0.41$, $p = 0.0011$			

Conclusions and Recommendations

Cognitive style: Most students displayed 'inchworm' (step by step, sequential, paper and pencil) mathematical strategies. Of 66 students, 55 were classified as 'inchworms'. Of the 55 inchworms, 22 scored at the extreme of the continuum. These students relied on formulae, step-by-step procedures or algorithms to answer each problem on the Test of Cognitive Style in Mathematics. Direct observation of the students by the researchers during the Test of cognitive Style in Mathematics confirms this suggestion as some students asked for directions and clarification to elementary school mathematical problems. Only two students displayed characteristics of 'grasshopper' (global, all-at-once, simultaneous) processing on the cognitive style test. Neither student scored at the extreme of the continuum. Both students displayed the skill to quickly estimate answers and complete computations mentally. Nine students displayed cognitive styles that were categorized as mixed or integrated.

Drug dosage calculation ability: Most students (89%) did not obtain a passing score of 90% on the drug calculation test. Of 66 students, only seven (11%) obtained passing scores with three students scoring 100%.

Relationship: There was a significant positive relationship between cognitive style and drug dosage calculation ability. Extreme inchworms (cognitive score = 10) could not pass the drug dosage calculation test while grasshoppers (cognitive scores = 24 - 26) did well. Instructors should encourage students to use right brain or grasshopper processing to solve dosage calculation problems. Strategies to promote right brain processing include enabling the student to visualize the problem by supplying the medication administration equipment (syringes, medicine cups, etc.) during instruction and encouraging mental visualization of the equipment during test periods. Students should estimate the solution before working out the problem with pencil an paper. Estimating will enable the student to set parameters for appropriate answerers. For example, two pills is more likely a correct answer whereas 20 pills or 200 pills is not a likely correct answer. Pencil and paper solutions can be used to validate the first estimate. Further research should explore strategies that promote right brain or integrated problem solving.

Faculty should identify the learning styles of students and develop instructional strategies that meet various individual learning needs. The philosophical question arises whether the instructor should use left brain instructional approaches for learners who test as a left brain processor or promote right brain or integrated (whole brain) processing by forcing students to use right brain processing.

Low scores on the Test for Cognitive Style in Mathematics and the drug dosage calculation test suggest that the student's basic mathematical skills were lacking. Health professions that call for medication preparation and administration should evaluate students for basic proficiency in mathematics before they enter the professional program. Students with deficiencies in basic mathematical skills should receive assistance from remediation programs before entry into the professional program or during the professional program, but before content related to drug dosage calculation and medication administration is taught.

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FLORDIA CERTIFICATE NURSING ASSISTANT WORKFORCE STUDY

BY

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FLORIDA CERTIFIED NURSING ASSISTANT WORKFORCE STUDY

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Abstract: In 1983, Florida's Legislature mandated the certification of all nursing assistants working in nursing homes and assigned this task to the Department of Education (DOE). By 1989, over 86,000 persons had been certified yet nursing homes were not able to locate sufficient new employees who were properly certified to fill their vacancies. The purpose of this study was to provide substantive demographic and employment data primarily for high level decision makers as they grappled with requirements of the national Omnibus Budget Reconciliation Act of 1987 (OBRA) which would go into effect July 1, 1989. The study was designed to answer several research questions, the major one being: are there any statistically significant differences in the responses of those Certified Nursing Assistants (CNAs) who obtained their certification by completing an approved program and those who obtained their certification by challenging the state certification examination? The study used participant observations and in-depth interviews. A 40 item survey instrument was developed by the project director and the steering committee and used in 1,212 interviews with nursing assistants who were on duty in nursing homes, hospitals, home health agencies and congregate living facilities. The same survey instrument was mailed to a random sample of 2,500 Florida CNAs. Also, 238 Directors of Nursing (DONs) were interviewed using an eight item interview instrument designed to assess the present situation and make future recommendations.

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The conventional stereotype of these workers was not upheld: two thirds of the participants were high school graduates; two-thirds wanted to continue their education in a health field; 418 participants were single parents caring for over 1,000 children; the average patient assignment on the day shift was 10-19 clients; and the average hourly salary was $5.48 with great variability of fringe benefits. Salary dissatisfaction was expressed by a large number of participants as was lack of recognition and respect. The large patient assignments caused more complaints than the low salaries. Statistically significant differences were found between those who obtained certification by program completion and those who obtained certification by challenging the State Certification Examination.

Florida was among the first half dozen states to pass a law requiring nursing assistants to be certified. This law was passed in 1983 through the herculean efforts of Representative Sample from Pinellas County (St. Petersburg). A high concentration of elderly persons and nursing home residents lived in that area of the state. It was felt that this law would upgrade the quality of service provided by nursing assistants.

The task of certifying these workers was assigned to the DOE which is not a regulatory agency. There were many road blocks and other hurdles to overcome particularly since the Legislature had not funded this activity. However, by 1988, more than 86,000 certificates had been issued to persons who completed an approved nursing assistant program or successfully passed the State Certification Examination. The law specified that nursing assistants working in nursing homes must be certified but other agencies quickly decided to make this certification a requirement for employment.

The CNA workforce in 1988 included persons working in many settings: Nursing Homes, Adult Congregate Living Facilities (ACLF), Home Health Agencies, Nursing Pools, Hospices, Hospitals, Physician Offices, Public Health Departments, Community Health Centers, Geriatric Day Care Centers, Walk-In Emergency Care Centers and Private Duty. These workers were supervised by Registered

Nurses (RN), Licensed Practical Nurses (LPN), Advanced Nursing Assistants and sometimes Physicians who are not always physically present in the care unit. Most CNAs, however, are employed in long term care in a variety of settings. They are known by an astounding variety of names, i.e., nurse aides, patient care assistants, nursing service technicians, sitters, restorative aides, home health aides, custodial care aides, activity aides, health support aides, etc.

Certification

del Bueno (1988) stated that: "A common definition of certification is that it is a process by which a non-governmental organization grants recognition of individual competence based upon achievement of specific predetermined criteria." Certification has been described also as a process that publicly attests to the achievement of specific qualitative or quantitative attributes or characteristics. Implicit and/or explicit in most descriptions of certification is the belief that it, like spinach, will be good for the consumers or clients served by the certified individual. However, in spite of the rhetoric, there is little or no evidence to support the notion that qualified individuals provide better care, give better service or achieve more desirable or higher quality outcomes than noncertified individuals. Certification may indeed be in the public's best interest, but it behooves those who espouse, implement and promote it to demonstrate for whom it has practical utility and whose best interests are really served--yours, mine, theirs or ours.

The time, money, effort and energy spent on certification activities may indeed be worthwhile and justifiable, in spite of the lack of evidence demonstrating real benefit to customers, if those within the professions and vocations value both the credential and the process necessary to acquire it. Those who value it, then, should bear the burden of costs. Conversely, certification may be a passing fad that will be replaced by another process, credential, or expectation that has both promise and practical utility for patients and clients.

Potential or actual legal liability involved in the certification process relates to conflict of interest, restraint of trade, and discrimination. These legal and logistical positions may be indicative of a much broader issue: public distrust of testing in general. People are becoming increasingly aware of the

important role that tests play in their lives and often feel powerless when it comes to the critical decisions made about their lives based on test results.

There appears to be widespread confusion about the certification process in Florida. Many institutions where nursing assistant training is provided give the program completer a school Certificate of Completion, which some employers consider to be the State Certificate. This problem has resulted in many persons being employed who do not have the State Certificate which the Florida law requires.

The DOE maintains a register of CNAs which is kept up to date by adding names of newly certified persons to the register but there are no provisions for deleting any person once certified and there is no mechanism to change the address if the CNA moves. For these reasons it would seem that the Florida Department of Professional Regulation, Board of Nursing, may be a more appropriate regulatory agency to perform the certification function.

Essential Role of the Nursing Assistant

The term, nursing assistant, is defined to mean any individual providing nursing or nursing-related services to residents in a nursing facility, but does not include an individual who is a licensed health professional or one who volunteers to provide such services without monetary compensation. Nursing assistants provide 90-95% of the care received by Florida's nursing home residents. They provide the intuitive, rich, powerful and often invisible essence of nursing care that makes the critical difference in the outcome of health.

According to Hayes (1989), professionals have to recognize the importance of those who provide the services in long term care. Professionals need to respect the care that poorly paid nursing assistants provide for those who have been cheated of their dignity by a thoughtless society. Professionals need to recognize the value of the professionals who care for the almost forgotten.

It is imperative that long term care be recognized and understood as health care institutions and the caregiver recognized as an essential part of nursing. Professional nurses direct this care and in every institution have developed job descriptions which identify the tasks assigned to various personnel, utilizing an assessment of resident needs and personal abilities.

When the RN or LPN delegates selected nursing functions or tasks to unlicensed persons (CNAs), the responsibility and accountability to the public for the overall nursing care remains with the licensed nurse. Board of Nursing administrative rules often identify which functions or tasks may or may not be delegated and under what conditions delegation may be made. The burden of determining the competency of the person who will perform the tasks and of evaluating the situations remains with the licensed nurse.

The dependence of the CNA workforce upon the nursing profession creates a host of problems. CNAs are often referred to as ancillary nursing personnel which carries the connotation of "serving as a handmaid, subservient to, subordinate or ancillary." These feelings of inferiority or dependency or uselessness permeates the workers ego structure, effectively destroying feelings of self worth. The potential contribution these persons can make to the delivery of efficient and effective patient care suffers. Curriculum changes in RN and LPN programs need to address this personnel management issue. This issue requires further research.

Workplace: Florida's Nursing Homes

There were 518 nursing homes listed in the Florida Department of Health and Rehabilitation Services (DHRS) directory in 1988. Of these, thirty were new facilities. The total number of beds was 57,866. The average size nursing home was 114 beds, ranging from 13 beds to 454 beds. Only 32 nursing homes have over 200 beds which explains some of the unique problems relating to the dividing of administrative responsibilities and staffing.

Fifty nursing homes containing 6,331 beds have a conditional rating (do not meet minimum standards at the time of the DHRS survey), of these, 38 are operated for profit, 10 are non-profit and 2 are government controlled. There are a total of 381 nursing homes that are operated for profit, 113 are non-profit and 10 are under governmental control. The median amount of RN time per patient per day in 1985, across all nursing homes, was approximately 12 minutes or less. Forty percent report six minutes or less of RN time per patient per day (Jones, 1987). In general, voluntary and government facilities and larger homes report higher ratios of RNs per 100 beds. Forty-five percent of full time RNs

earn less than $400.00 per week. The nature of the ownership determines policy issues. Many nursing homes in Florida are owned by large corporations (chains) with definite rules for the administrator to enforce.

Workplace: Florida's Hospitals

Excluding Veterans and Military Hospitals, Florida has a total number of 283 licensed hospitals with 64,618 beds, of which 10,726 are listed as psychiatric short-term, psychiatric long-term, substance abuse short-term or substance abuse long-term. There are nine comprehensive rehabilitation hospitals, five children's, six special medical, one tuberculosis and two eye disorders. Obstetrical patients are accepted by 115 hospitals while psychiatric patients are accepted by 95 hospitals.

By type of control, Florida has 12 state, 20 county, 4 city, 2 city/ county, 27 hospital district, 3 church operated not for profit, 2 individually owned for profit, 4 partnership owned for profit and 109 corporation owned for profit hospitals. In 1987, the total number of Florida's hospital employees was 173,087. This figure includes thousands of both certified and uncertified nursing assistants and patient care assistants.

Most Florida hospitals have discontinued their own nursing assistant training programs, but employ program completers from both public and private schools. All State approved Nursing Assistant Programs have a clinical experience component in a hospital as well as in a nursing home. Hospital nursing assistants are not required to be certified at this time, except for those working in the hospital's short term skilled nursing facility. Their assignments vary considerably from central service aide to transporters, messengers (pages), patient sitters, obstetrical aides and pediatric service aides. The median time of RN contact per patient per day in hospitals is 45 minutes.

Workplace: Nursing Pools, Temporary Agencies

In Florida, nursing homes and hospitals have become increasingly dependent upon temporary, per diem staff. This problem has many ramifications and associated challenges. Nursing assistant full time staff resent the per diem person and many made comments about this problem. The full-time person sees the per diem person as a useless individual who must be

oriented and helped all day, yet who receives much more pay than the regular staff person, forgetting that the per diem person has no job security, fringe benefits or even paid days off. Per diem people work under many hardships because of the lack of orientation to the facility and being acquainted with the residents to whom they are assigned. Even administrators and DONs resent the per diem persons for a variety of reasons, most of which revolve around costs. Institutions are buying availability because of urgent need. Home health care is the fastest growing sector of the health care industry and as the shift from institution to community based care occurs, perceptions of professional roles, provider--consumer relationships, trust and therapeutic relationships also change. Recognizing the major differences between providing care in institutions and in someone's home is essential to quality home care.

Florida Approved Nursing Assistant Programs

In Florida, there are 165 DOE approved programs in secondary schools, area vocational centers, community colleges, private schools and proprietary schools. These programs are established after completing the approved nursing assistant program application and sending this form, with a copy of the clinical affiliation agreements (one for each site, i.e., nursing home and hospital) where the students are to have teacher supervised, hands on, clinical experiences. Each approved program in every public school must be taught by an RN who has met the requirements for DOE certification and has met continuing education and specific teacher education preparation criteria. Proprietary schools do not require teachers to be state certified by the DOE, and frequently use LPNs as instructors. This short changes the students since LPNs may not supervise students in the clinical areas and RNs employed by the clinical facilities have too much to do to add this large responsibility to their work load. Because of this, students get observational clinical experience rather than hands on in many proprietary institutions. The State Board of Independent Colleges and Universities and the State Board of Independent Postsecondary Vocational, Technical, Trade and Business Schools (IPVTT&B) license the private and proprietary schools and colleges and supposedly determine that the DOE Curriculum Framework and Student Performance Standards are followed. These boards are allotted too few staff

positions to allow them to adequately police the programs. The public school approved programs are subject to a program review by the Health Occupations Program Specialist upon application and at least once every three years thereafter.

Any licensed nursing home wishing to conduct an approved nursing assistant program must first obtain a license to conduct a school from the IPVTT&B Board, then apply for approved program status from the DOE. A few of the national chains operating nursing homes conduct programs in Florida with their program completers being required to take the state Nursing Assisting Certification Examination to become certified.

Curriculum Frameworks and Student Performance Standards

These are reviewed annually and revised as needed by the DOE. Generally the DOE personnel convenes a curriculum revision committee, made up of DONs from the nursing facilities, county level health occupations education supervisors, instructors, teacher educators and DOE program specialists. Every approved program is provided with a copy of the curriculum framework and student performance standard.

The framework is a legislatively mandated guide, which includes information regarding credit, applicable level(s), teacher certification coverage, major concepts/content, laboratory activities, special notes and intended outcomes. Special notes concern the number of hours of instruction, methods of instruction and the applicable vocational student organization which is intended to provide leadership training experiences and reinforce specific vocational skills. Teacher supervised hands on clinical experiences are a portion of the laboratory activities mandated by the curriculum framework.

The Student Performance Standards are prepared and revised by the same committee convened for the curriculum framework revisions. They are performance objectives. These were initiated to provide employers throughout the state with a list of performances they may expect program completers to have attained.

Review of Literature

An extensive review of the literature advanced the concept of the essential role of the nursing assistants and their acute need for respect from professionals. Lusky (1988), suggested that a supportive environment with outlets for staff, including CNAs, to discuss difficult patients and problems can lessen the potential for patient abuse which is misuse of power, a violation of responsibility and trust, rooted in misunderstanding, anger, feelings of low self-worth and lack of self control. Prevention entails developing an environment in which care givers feel valued and able to ask for help when they need it. A bibliography listed at the end of this article provides important insights.

Overview of the Study

This descriptive anthropological field study using participant observations and in-depth interviews to obtain qualitative data does not utilize sophisticated research methodology. However, although this study might lack a stringent research format, it does provide information to enable replication if needed.

A multitude of problems surround this occupation. To gain some insight into the overall dimensions of these problems, a steering committee was formed to include representatives from the DOE, DHRS, Florida Health Care Association, Florida Nurses Association, Florida Hospital Association and Florida Organization of Nurse Executives. This committee made many recommendations for the conduct of the study and the development of the survey instrument (Appendix A). It was decided that both a mailed survey to a random sample of 2,500 CNAs and personal interviews of 1,000 CNAs at their work site should be done. Additionally, DONs, staff development directors or administrators should be interviewed, at least one from each site visited. Job descriptions and institutional philosophy of care would be requested.

The study was designed to answer several research questions:

1. Are there any statistically significant differences in the responses of those CNAs who obtained their certification by completing an approved program and those who obtained their certificates by challenging the state certification examination?

2. Are there any statistically significant differences between those CNAs who responded to the mailed survey and those who were interviewed?
3. Are there any statistically significant differences in the responses of male versus female participants.
4. Are there curriculum changes needed?
5. Does the certification law need revision?

The objectives of this study were to:

1. Test the goodness of fit between the curriculum frameworks for the Nursing Assistant, Home Health Aide and Patient Care Assistant and a selected list of tasks (which the participants in the study would tell us they perform and the interviewed DON would identify as weak or needing improvement).
2. Determine what curriculum changes may be needed with the new Federal Regulations.
3. Collect demographic data to identify industry and educational needs.
4. Determine what changes, if any, need to be made in the Florida law governing certification.
5. Determine whether CNAs have had inservice education programs on resident rights and resident abuse.
6. Discuss the impact of the nursing shortage on the long term care industries (This objective was added as many DONs identified the problem).

Six interviewers, all well known master's degree prepared RNs were selected from different geographical areas of the state. At the orientation meeting, they were assigned particular counties to give each interviewer a relatively similar number of nursing homes and other health care agencies in proximity to their homes. Inter-rater reliability was established by three two-day workshops and weekly conference calls.

It was decided to use identical questions for the mailed survey and interviews, color coding the forms for data processing ease. A list of interview questions for the DONs, staff developers and/or administrators was developed to guide the interviewers through a consistent process. The 40 items on the survey instrument were designed to provide demographic data, employment status, remuneration, job satisfaction and information about a limited number of tasks performed. These items were directly related to the objectives of this study.

Using convenience sampling, the interviewers chose the sites to be visited. Bearing in mind that some facilities declined to participate because of emergencies, flu epidemics, on site DHRS inspections and some apprehension on the part of the administrators that this study might somehow be a related union activity, the interviewers obtained DON or staff developer interviews and some CNA interviews in 51 counties. One hundred-fifty-eight of the 518 nursing homes participated in the interviews as did 40 hospitals, nine home health agencies or nursing pools and nine ACLFs. Of the participating nursing homes, 38 were nonprofit, six were government controlled and the remainder (113) were for-profit.

The interviewers also chose the hospitals to be visited. Many hospitals felt that nursing assistants should not be included in the study since they are not required to be certified. However, interviews were conducted in 40 hospitals.

Sixteen of 67 counties were not visited for interview purposes. Of these counties, six have no nursing homes. In the 10 remaining counties there are 22 nursing homes. Some of these were not visited because nursing home administrators decided that they did not wish to participate for one reason or another, or interview dates were cancelled because of emergencies or other reasons.

The random sample for the mailed survey was drawn by the North East Data Center computer using a table of random numbers after cross matching social security numbers of the CNAs with the unemployment files of the Florida Education and Training Placement Information Program. Mailing labels were provided for 2,700 persons. The survey response rate was 19%, therefore survey results may not represent statewide norms. However, combined interview and survey data should

ameliorate this problem. Content validity of the items on the CNA Workforce Survey form was inferred from the judgment and agreement of nursing experts, DONs, steering committee members and RN interviewers. Reliability was established by the test-retest method and a Pearson product-moment correlation coefficient computed between the scores of the 25 CNAs who were interviewed in early December 1988 and repeated interviews in early February 1989 using the same survey questions.

Limitations of the Study

Several limitations may have been inferred earlier, but the following should be noted:

1. There was no way of controlling who returned the mailed survey forms. Six persons were interviewed who had received the blue survey form in the mail.
2. The DOE registry was started in 1984. No provision was made to update mailing addresses, therefore we received 612 undeliverable forms.
3. The interviewed sample was not a random sample since whoever was working on the particular day the interviewer was in that institution was interviewed.
4. Very few of the third shift (11 p.m. - 7 a.m.) employees were interviewed (2% of the CNA group), but 18% of the respondents to the mailed survey worked the third shift.
5. Two hundred thirty three persons who were on duty and wearing a CNA pin were indeed not certified. These responses have been reported as a third sample in this study.

Assumptions:

It is assumed that differences in responses may occur (a) within the various geographic regions of the state; (b) the type of control of the institution; (c) the rating of the institution; (d) the type of health care facility; and (e) the age, basic education and home responsibilities of the participants.

Results and Analysis

The volume of data generated cannot be fully presented within this report. Selected highlights or unexpected findings only will be presented. Collated frequency counts and cross tabulations were

obtained, analyzed and interpreted for the several sets of participants: 989 interviewed CNAs, 223 interviewed non-certified nursing assistants, 354 mailed survey forms returned, and 238 DON interviews. Responses of 1,343 CNAs (interviewed and mailed respondents, excluding the not certified) were carefully studied to answer the first research question. There were 597 certified by test taking and 719 certified program completers, 5% of whom were male and 55% of whom were black. Five percent were of Hispanic origin and their average age was 38. A most unexpected finding was that 70% of the participants were high school graduates, 8% had some college, and 63% said they plan to further their education in another field. A highly significant difference was found in the responses between program completers and test takers to the question "Did the training you received meet your needs as a beginning CNA?" and a similar significant difference existed for the question "Do you feel you were adequately prepared for the tasks you now perform?" These responses bear mute testimony to the insecurity these test takers felt as beginning practitioners. Program completers showed longer length of employment than test takers and changed jobs less often. Program completers enjoyed more fringe benefits, particularly health insurance and educational tuition reimbursement. More program completers worked in hospitals, nursing homes and ALCFs, but more test takers worked in home health agencies, private duty, physician offices and community health centers. This may be related to the test takers insecurity regarding their preparation for practice. Comparison of responses regarding tasks performed are not highly significant overall, but more test takers performed tube feedings, tested urine specimens, provided isolation, changed dressings and performed catheter care. Test takers saw inservice as being more useful than did program completers. Inservice on patient abuse apparently has failed to reach nearly half of the participants.

The null hypothesis to the first research question was therefore rejected by the data. The data also rejected the null hypothesis to the second research question--there were many significant differences in responses between the mailed and interviewed samples.

The comparison of male versus female responses revealed that a much greater percent of the male participants were white, younger, never married and obtained their certificate by challenging the

state certification test. The men have changed jobs more often, have a larger patient assignment and are more dissatisfied with working conditions. There is a highly significant difference in the task, move patient with a hydraulic lift. A larger percent of the males are working part-time, but work the 11-7 shift more often.

Responses to the DON Interviews

The DONs believed that the quality of care has improved since certification began: 58%--yes, 20%--no and 23% did not know because they were not working in nursing homes prior to 1984. The DONs interviewed responded openly to the questions asked. Many were working toward improving the fringe benefits and work life of their CNAs. They saw the need for child care for their workers since much absenteeism is the result of lack of available child care assistance. The DONs gave the DOE much praise for the management of certification, but faulted the continuance of the challenge test without program attendance. Their responses to Item 4, concerning their last six newly employed aides, were very positive for the completers of public school approved programs, but generally negative toward the proprietary schools. Job descriptions and institutional philosophy of nursing care documents were obtained from each DON and provided much insight into the occupation.

Nearly all the DONs interviewed felt that the present curriculum was weak in the area of employability skills including the importance of attendance, punctuality and dependability. Ethical concepts also needed to be upgraded.

The single most often repeated suggestion (N = 68) was for larger, more realistic student clinical assignments. Interviewers were told that, in many instances, two students were assigned to one patient for the complete six-hour student day during the ten days of clinical experience. When these students completed the program and went to work, they were faced with assignments of eight or nine patients on the 7-3 shift, with little or no work organization skills. To be sure, an unreasonable patient assignment in the clinical area would make clinical activities a non-learning experience.

DONs mentioned a culture gap where the median age of residents is 81 years, 75% are female

and 93% are white. The median age of participants in this study was 38 years, 95% were female and 43% were white. This accounted for many comments from both DONs and participants that more instruction is needed to meet the psychological needs of patients with dignity, respect and tact--human relations skills. Many DONs and CNA participants said that they needed more instruction in body mechanics: how to lift and turn patients, how to prevent back injuries and other sprains, hernias, etc.

Conclusions

The story these data have told is one of a vulnerable workforce pleading for understanding and respect. The nursing care they are giving for low pay and low status has improved in the last five years since certification began, but they feel that it could be better if additional help were provided, if more cooperation existed with nurses and coworkers if there were less absenteeism and if coworkers were more highly motivated. This workforce needs a voice through which it can enunciate its concerns. It is imperative that professional nursing recognize the importance of nursing assistants and the value of their care. Nurses must recognize that this workforce is dependent upon nurses and that feelings of inadequacy, inferiority, dependency or uselessness effectively destroy feelings of self worth and may result in inadequate patient care.

The research data show statistically significant differences between those who have been certified by program completion and those who have been certified by challenging the State Nursing Assistant Certification Examination. This finding should assist the DHRS and the Florida Health Care Association as well as the DOE as they jointly plan the implementation of the new OBRA, 1987, regulations. The latest interpretations of the deemed status is that the competency evaluation may not be delegated to the facilities.

The data also identified many highly significant differences between the interviewed samples and the mailed responses, with the mailed responses most often approaching what is believed to be reality. The data identified significant differences in responses of males versus females, which presents some unanswered questions, such as (a) why are so many more of the male participants white, (b) why are more men working part-time, and (c) why are they asked to work extra shifts more often?

The data indicated that a total number of 882 nursing assistants in the three samples were responsible for a total of 1,734 children, making the provision of child care a number one priority for these workers. It is no wonder that this is the number one cause of tardiness and absenteeism. In our changing society, some way must be found to provide affordable child care for weekends, school closings and for monitoring children alone.

The data indicated that curriculum changes should involve more emphasis in several areas: employability skills, ethics, and body mechanics. A larger, more realistic clinical assignment should be given to students in their clinical experience. Cardiopulmonary Resuscitation (Heart Saver) and First Aid with proper renewal should be required of every CNA.

Recommendations

1. Intensive efforts be made by the DOE to educationally remediate the employed nursing assistants so they could enter an LPN or ADN program. Adult Community Education Centers could arrange this instruction to be conducted in the nursing home from 1-5 p.m. daily so that individuals would incur no additional travel.

2. Testing for nursing assistant certification without program completion should be discontinued except for those persons coming from out-of-state who have completed a nursing assistant program and have a successful work record. All other persons must be enrolled in and satisfactorily complete an approved program. DHRS should make it mandatory that nursing homes utilize per diem help to give applicants time to complete a program.
3. All approved programs should be taught by a Registered Nurse. Practical nurses may serve as teacher aides in the classroom only.
4. Curriculum should include provision for a gradual increase in patient assignment during the clinical experience phase. To prevent teacher overload, a modified preceptor program could be utilized.

5. More emphasis should be placed on employability skills, body mechanics and on legal and ethical concepts.

6. A study of the changes of particular patient problems should be conducted to assess the impact of Diagnostic Related Groupings (DRGs) in Florida.

7. The Health Occupations Educators Association of Florida, the Florida Nurses Association and the Florida Health Care Association, jointly should sponsor the formation of a Florida Chapter of the American Nursing Assistant Association to provide nursing assistants with the benefits of belonging to a group who could help them achieve better working conditions and fringe benefits. Membership in this organization could provide a professional affiliation which could help solve problems, provide a means for political/legislative activities, offer liability and group health insurance, and retirement plans.

8. All professional and practical nursing programs should upgrade their curricula in the areas of personnel management and leadership to lessen the dissatisfaction caused by lack of communications and respect.

9. All employing agencies and schools should provide a type of affordable child care arrangements for these workers.

10. Data should be revisited at a later date to continue analysis and reporting.

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MEMBERSHIP RESPONSES TO NATIONAL HEALTH OCCUPATIONS EDUCATION CERTIFICATION STANDARDS AND PHILOSOPHY

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MEMBERSHIP RESPONSES TO NATIONAL HEALTH OCCUPATIONS EDUCATION CERTIFICATION STANDARDS AND PHILOSOPHY

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Abstract: In 1989, the Health Occupations Education Division of the American Vocational Association solicited position papers from its affiliate organizations on the following topics: (a) Mission and Philosophy--National Association of Health Occupations Teachers, (b) Program Standards--National Association of Supervisors and Administrators of Health Occupations Education, and (c) Teacher Certification Standards--Association of Health Occupations Teacher Educators. The Policy Board decided to combine the Philosophy and Teacher Certification Standards into a single questionnaire and mail the questionnaire to one-half of its membership in order to provide an opportunity for members to participate in this important activity. This paper presents the findings derived from the data.

Background

During the 1989 American Vocational Association (AVA) Conference, the Health Occupations Education (HOE) Policy Board took action to solicit position papers from its affiliates on the following topics:

(a) Mission and Philosophy--National Association of Health Occupations Teachers (NAHOT), (b) Program Standards--National Association of Supervisors and Administrators of Health Occupations

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Education (NASAHOE), and (c) Teacher Certification Standards--Association of Health Occupations Teacher Educators (AHOTE). At the 1990 AVA Conference, Moore and Richards (1990) presented a position paper titled, "Development of National Health Occupations Education Teacher Certification Standards," which was accepted by the Policy Board.

Subsequent discussion at the conference centered on obtaining input on position papers from members. That discussion led to the combination of the Philosophy statement and the Teacher Certification Standard in a single survey. This survey would be sent to a random 50% of the AVA-HOE membership and the Program Standards would be sent to the other half of the membership. Many times, division members cannot attend the national conference; therefore, using a mail questionnaire format would provide an opportunity for all members to participate in this important activity.

Instrument Development

The questionnaire consisted of three parts: demographic information, HOE philosophy statement, and national HOE certification standards. Demographic data included (a) the state in which one works, (b) primary responsibilities of the position, (c) level of responsibility, (d) number of years employed in one's current position, (e) program area of primary position, and (f) number of years as AVA-HOE member. Participants were asked to enter any additional comments in the space provided.

The second part of the questionnaire consisted of the philosophy statement with a forced choice and open ended response items. Participants were directed to check the appropriate box: (a) I agree with the statement of philosophy, or (b) I disagree with the statement of philosophy. In addition, space was provided for additional comments.

The third part of the questionnaire contained the eight teacher certification standards with supporting statements, which delineated each standard for a total of 32 supporting statements. Each statement was followed by a Likert-type rating scale from 5, strongly agree, to 1, strongly disagree with 3 being neutral, neither agreeing or disagreeing. Participants were directed to identify their level of agreement or disagreement with each statement by circling the appropriate number according to the rating scale.

State specialists, health occupations teacher educators, and health occupations teachers reviewed the questionnaire for clarity and face validity. They accepted the questionnaire after some minor wording adjustments.

Population

The population consisted of all members of the AVA-HOE division. AVA supplied the membership labels in zip code order for HOE members. Beginning with the first label, program standards were sent to the member specified by the first label; certification standards and philosophy were sent to the member specified by the second label. This alternative method continued for all members, 1728 in total. The philosophy and teacher certification standards were sent to 864 (50%) members while program standards were sent to the other 864 (50%) members.

A letter explaining the purpose of the study, and a questionnaire were mailed on May 28, 1991. It was noted in the letter that there would be only one mailing due to budget limitations. No stamped envelopes were included in the mailing for the same reason. Two hundred and sixty-four (31%) questionnaires were returned by August 1, 1991. Of the 264 questionnaires, one participant rewrote the philosophy but did not respond to the certification standards. Therefore, 263 questionnaires were used for data analysis. The high return of questionnaires reflects the willingness of members to participate in this important activity.

Data Analysis

Data were entered into the computer mainframe at The Pennsylvania State University. Data analyses were conducted using SAS (1987) to determine frequencies and percents.

Results

The results are reported according to the three parts of the questionnaire. Demographic information will be followed by responses to the philosophy statement and responses to the certification standards.

Demographic Information

State in which one works. Responses were not received from the following states: Connecticut,

Hawaii, Nevada, Rhode Island, Vermont, Washington, and Wyoming. The majority of responses were from Ohio and Oklahoma with 19 each; followed by Florida, Georgia, and North Carolina with 15 each. Table 1 lists the responses, from high to low, for the majority of states. Those states not listed had one to five responses.

Table 1

Rank and Frequency of Responses by State

State	Frequency	Rank
Ohio	19	1
Oklahoma	19	1
Wisconsin	18	3
North Carolina	16	4
Florida	15	5
Georgia	15	5
Virginia	14	7
Kentucky	13	8
Alabama	11	9
Texas	11	9
Missouri	10	11
Tennessee	9	12
Michigan	8	13
Mississippi	7	14
California	7	14
West Virginia	6	16

Primary position responsibility. Table 2 shows that their majority of participants (120, 46%) listed teacher as their primary responsibility, followed by program coordinator (85, 32%) and state or local supervisor (23, 8%). Twenty-three participants listed other which included responsibilities such as past state supervisor, certified operating room technician, rehabilitation professional, psychiatric nurse, health occupations students of America state adviser (2), program director, retired (3), assistant professor of nursing, clinical coordinator, instructional dean, department of nursing chairman, resource teacher, health occupations education department chairman, supervisor of professional students, state level director of health and public service occupational education, and program coordinator.

Table 2

Frequency of Responses by Position*

Position	Frequency	Percent
1. Teacher	120	46%
2. Program Coordinator	85	32%
3. Supervisor-local	14	5%
4. Supervisor-state	9	3%
5. Teacher Educator	11	4%
6. Other	23	9%

*One participant chose not to respond

Level of responsibility. Level of responsibility had four possible responses: secondary, postsecondary, continuing education, and other (Table 3). The majority of responses listed secondary or postsecondary (44% each). Participants who chose other, included the following responsibilities: adult education (3), childbirth preparation, rehabilitation inservice, working with temporary nursing agency, worked in all areas (4), health assistant, chairman of board of postsecondary vocational-technical education, supervisor of state certification of nursing assistants, retired and conducting self funded research, executive secretary for state licensed practical nursing association, and practical nursing education.

Years in current position. Table 4 lists the responses, from high to low, for number of years in one's current position. Responses ranged from 1 to 28 years with two participants not responding to the question. The majority of respondents had two years of experience in their current positions. Responses were subdivided into five year ranges: 1 to 5 years (86 responses), 6 to 10 years (57 responses), 11 to 15 years (53 responses), 16 to 20 years (44 responses), 21 to 25 years (18 responses), and 26 to 30 years (3 responses).

Table 3

Frequency of Responses by Level of Responsibility*

Level of Responsibility	Frequency	Percent
Secondary	115	44%
Postsecondary	115	44%
Continuing Education	17	6%
Other	15	6%

*One participant chose not to respond

Table 4

Frequency of Responses by Number of Years in Current Position*

Years	Frequency	Cumulative Frequency	Percent
1 through 5	86	86	33%
6 through 10	57	143	22%
11 through 15	53	196	20%
16 through 20	44	240	17%
21 through 25	18	258	7%
26 through 30	3	261	1%

*Two participants chose not to respond

Program area. Table 5 lists the program areas identified by participants. Twenty-seven program areas were identified with the majority of responses in health occupations education (98), followed by practical nursing (59), allied health (17), nursing assistant (13), and nursing (12). Three or more

responses were received from the following program areas: medical assisting, medical laboratory technician, dental assisting, surgical technician, medical services, radiology technician, respiratory care, and health services assisting.

Table 5

Frequency of Responses by Program Area*

Program Area	Frequency	Percent
Health Occupations	98	40%
Practical Nursing	59	24%
Allied Health	17	7%
Nursing Assistant	13	5%
Nursing	12	5%

*Fifteen participants chose not to respond

Years as AVA-HOE member. The range of years as AVA-HOE member was 1 to 32 years. Table 6 lists the responses which were subdivided into five year ranges: 1 to 5 years (100), 6 to 10 years (60), 11 to 15 years (45), 16 to 20 years (33), 21 to 25 years (14), 26 to 30 years (4) and 31 to 35 years (1).

Table 6

Frequency of Responses by Membership Years in AVA-HOE*

Years in AVA-HOE	Frequency	Cumulative Frequency	Percent
1 through 5	100	100	39%
6 through 10	60	160	23%
11 through 15	45	205	18%
16 through 20	33	238	13%
21 through 25	14	252	5%
26 through 30	4	256	2%
31 through 35	1	257	0%

*Six participants chose not to respond

In summary, demographic data indicated that the majority of participants were located in midwestern or southeastern states and were employed as either teachers or program coordinators in secondary or postsecondary educational institutions. Over one-half (55%) of the participants had been in their job positions from one to ten years. The two highest program areas listed by participants were health occupations education (98) and practical nursing (59). The majority of participants (160) had one to ten years of AVA-HOE membership.

Philosophy Statement

Philosophy. After reading the philosophy statement, participants were asked to check the appropriate box showing agreement or disagreement with the statement. Of the 263 responses, 257 (95.8%) participants agreed with the statement, 5 (1.9%) participants disagreed with the statement, and 6 (2.3%) participants did not check either box. Under comments, one individual rewrote the philosophy to stress that education is a cooperative effort between the educator and the learner, and that individuals must accept some of the responsibility for their own learning. Other written comments included: feel it touches on all areas in health occupations education, very good, very broad, very thorough and well done, a lot of verbage, remove the word vocational as a negative image has prevailed, it does not speak to "life" experiences and the ability to transfer credits, too lengthy, excellent, well stated, well written, too long, too wordy and rambling, excellent statement, strongly agree, terms such as quality should be further defined, if this is a first draft of a new philosophy statement, it is excellent. In summary, the majority of participants agreed with the philosophy statement.

Teacher Certification Standards

Participants were asked to identify their level of agreement for each supporting statement. For ease in reporting, strongly agree was combined with agree (A), strongly disagree was combined with disagree (D), while neutral (N) remained the same. Some respondents chose not to respond to certain statements and these are noted as no response (NR). The percentage of responses is listed under each category. The original data are available through the authors.

Standard 1. **State departments of education require that individuals who are employed as health occupations education teachers are qualified for those roles**. Table 7 lists the four supporting statements for Standard 1. The majority of participants agreed with all four supporting statements with the highest level of agreement (95%) for Statement 1.1.

Table 7

Standard 1: Responses to Supporting Statements

Statement	A	N	D	NR
1.1 Professional preparation through licensure/certification/registration.	250 95%	6 2%	5 2%	2 1%
1.2 Baccalaureate degree required for permanent certification.	149 57%	33 13%	77 29%	4 1%
1.3 Baccalaureate degrees elevate quest for excellence in education.	162 61%	55 21%	41 16%	5 2%
1.4 States should offer baccalaureate degrees in health occupations.	192 73%	45 17%	19 7%	7 3%

Standard 2. **State departments of education require that health occupations teacher education programs need to include competence in general education, professional education, and occupational education**. Table 8 lists the four supporting statements for Standard 2. The majority of participants agreed with all four statements. The highest area of agreement was with statement 2.1, advocate on-the-job experience as health practitioners prior to teaching.

Table 8

Standard 2: Responses to Supporting Statements

Statement	A	N	D	NR
2.1 Advocate on-the-job experience as health practitioners prior to teaching.	253 96%	8 3%	0 0%	2 1%
2.2 Support teacher education preparation including student teaching in order to help practitioners become teachers.	202 77%	36 14%	23 9%	2 1%
2.3 Require professional education in working with special needs students (handicapped/disadvantaged/at risk).	169 64%	51 19%	40 15%	3 1%
2.4 Advocate knowledge of program management and the creation of programs as well as classroom teaching skills.	220 83%	29 11%	11 4%	3 1%

Standard 3. **State departments of education require certification at both the secondary and postsecondary levels for the health occupations education vocational area.** Table 9 lists the supporting statements for Standard 3. The majority of participants agreed with the supporting statements. The highest level of agreement (95%) was with statement 3.3. In addition, this statement had no disagreement responses.

Standard 4. **State departments of education require the establishment** of cooperative agreements to encourage reciprocity in health **occupations education certification.** Table 10 lists the supporting statements for Standard 4. The majority of participants agreed with all three statements. More responses were found in the neutral category than in the disagreement category.

Table 9

Standard 3: Responses to Supporting Statements

Statement	A	N	D	NR
3.1 Advocate certification for instructors	241	8	7	7
a. of secondary HOE programs,	92%	3%	3%	3%
b. of postsecondary HOE programs, and	231	15	9	8
	88%	6%	3%	3%
c. adult level vocational programs.	221	17	16	9
	84%	7%	6%	3%
3.2 Advocate certification for HOE teachers separate from trade & industry and/or other vocational areas.	193	30	31	9
	73%	11%	12%	3%
3.3 Credentialing guidelines in HOE should be clearly defined and consistently applied by individuals knowledgeable in HOE teacher education.	251	7	0	5
	95%	3%	0%	2%

Table 10

Standard 4: Responses to Supporting Statements

Statement	A	N	D	NR
4.1 Advocate cooperative certification agreements among state departments of education to encourage reciprocity in HOE certification.	235	15	4	9
	89%	6%	2%	3%
4.2 Advocate certification by endorsement be handled similar to licensure by endorsement when one relocates to another state.	219	28	5	11
	83%	11%	2%	4%
4.3 Advocate national standards that would certify HOE teachers and encourage reciprocity.	220	26	7	10
	83%	10%	3%	4%

Standard 5. **State departments of education require recency of occupational experience.** Table 11 identifies the supporting statements for Standard 5. The majority of participants agreed with three of the four statements. The fourth statement regarding recency of occupational experience, had a 56% agreement with three to five years. For zero to five years, participant response represented 96%.

Table 11

Standard 5: Responses to Supporting Statements

Statement	A	N	D	NR
5.1 A continual upgrading of skills should be part of HOE certification requirements.	231 88%	16 6%	9 3%	7 3%
5.2 Advocate continuing education beyond the previously established level of competence.	192 73%	42 16%	19 7%	10 4%
5.3 Support mandatory continuing education a. in health occupations area, and	202 77%	30 11%	21 8%	10 4%
b. in education.	170 65%	47 18%	31 12%	15 6%
5.4 Advocate recency of occupational experience within a. 0 - 2 years,	106 40%	65 25%	74 28%	18 7%
b. 3 - 5 years, and	149 56%	48 18%	49 19%	17 7%
c. more than 5 years.	60 23%	52 20%	125 48%	26 10%

Standard 6. **State departments of education require a commitment torecruitment and retention strategies**. Table 12 lists the three supporting statements for Standard 6. The majority of participants agreed with statements 6.1 and 6.3. Approximately equal numbers of participants agreed (101) or responded neutral (107) to statement 6.2: A key recruitment challenge is increasing the number of minority teachers.

Table 12

Standard 6: Responses to Supporting Statements

Statement	A	N	D	NR
6.1 Advocate recruitment of qualified health care practitioners as teachers.	229 87%	24 9%	2 1%	8 3%
6.2 A key recruitment challenge is increasing the number of minority teachers.	101 38%	107 41%	47 18%	8 3%
6.3 Advocate retention incentives for experienced teachers.	233 88%	17 7%	6 2%	7 3%

Standard 7. State departments of education require the establishment of strong education linkages to reflect the rapid technological changes taking place in the industrial environment, and articulation agreements between all levels of educational institutions. Table 13 identifies the supporting statements for Standard 7. The majority of participants agreed with the three supporting statements.

Table 13

Standard 7: Responses to Supporting Statements

Statement	A	N	D	NR
7.1 Advocate articulation agreements that recognize previous education and experience among the different educational levels.	234 89%	18 7%	3 1%	8 3%
7.2 Collaborative working relationships between business and industry and educational facilities should prove to be mutually beneficial.	245 93%	9 3%	1 0%	8 3%
7.3 Involvement of employers, employees, students, consumers, and citizens on HOE advisory committees assures program relevance, increases public awareness, creates partnerships, and builds and maintains strong effective instructional programs.	247 94%	5 2%	4 2%	7 3%

Standard 8. **State departments of education require the establishment of a national data-base for vocational teacher education, including health occupations teacher education.** Table 14 lists the supporting statements for Standard 8. The majority of participants agreed with the three supporting statements.

Table 14

Standard 8: Responses to Supporting Statements

Statement	A	N	D	NR
8.1 Vocational teacher education programs need research specifying the knowledge base underlying teacher preparation.	194 84%	53 20%	9 3%	7 3%
8.2 The teacher education reform movement will have a positive effect on vocational education.	149 57%	89 34%	13 5%	12 5%
8.3 State education departments see a need for research to be conducted on HOE.	184 70%	57 22%	11 4%	11 4%

In summary, the majority of participants agreed with all eight certification standards. Within Certification Standard 5, most participants agreed that recency of occupational experience should be within 0 to 5 years. In Certification Standard 6; the majority of participants agreed with two of the three statements.

Conclusions and Recommendations

Two hundred sixty-four (31%) questionnaires were returned. This represents a high percentage of return when the investigators sent a single mailing with no return stamped envelope. The percentage of returned questionnaires suggests a strong commitment to the organization by AVA-HOE members.

Demographic data revealed that the majority of participants were located in midwestern or southeastern states. They were employed as teachers or program coordinators in health occupations education (98) or practical nursing (59). Over one-half (55%) of the participants had been in their job

positions from one to ten years, while 61% of the participants had one to ten years of AVA-HOE membership.

A strong majority of participants (95.8%) agreed with the statement of philosophy (Appendix A). Six participants (2.3%) did not answer. The majority of participants agreed with all eight certification standards. Standard 1, with its four supporting statements, had an overall agreement response of 72%. Standard 2, with its four supporting statements, demonstrated an overall agreement response of 80%. Standard 3, with its five supporting statements, showed an overall agreement response of 86%. Standard 4, with its three supporting statements, had an overall agreement response of 85%. Standard 5, with its four supporting statements and advocating recency of occupational experience within 0 to 5 years, demonstrated an overall agreement response of 80%. Standard 6, with two of its three supporting statements accepted by participants, showed an agreement response of 88% for the two statements. The supporting statement, 6.2: A key recruitment challenge is increasing the number of minority teachers, had 38% agreement, 41% neutral, 18% disagreeing, and 3% not responding. The majority of responses (41%-- neutral) neither agreed or disagreed with the statement. Standard 7, with its three supporting statements, demonstrated an overall agreement response of 92%. Standard 8, with its three supporting statements, showed an overall agreement response of 70%.

From the data, the authors recommend that the Health Occupations Education Policy Board adopt the philosophy and certification standards contained within this study. This action should take place at the American Vocational Association Conference in December 1991. Based on the rapid changes taking place in the health care industry and education, the authors recommend a review of the philosophy statement and the National Teacher Certification Standards on a periodic basis. Further, the authors recommend that AVA-HOE members be recognized for their personal and professional commitment to the organization.

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HEALTH OCCUPATIONS EDUCATION TEACHER EDUCATORS: WHO ARE THEY?

by

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HEALTH OCCUPATIONS EDUCATION TEACHER EDUCATORS: WHO ARE THEY?

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Abstract: While little is known about vocational education teachers, less is known about vocational teacher educators, and even less than that is known about health occupations teacher educators. In order to establish baseline information, a national survey was conducted to identify demographic and professional information about health occupations teacher educators. Findings of the study are compared to the available information about vocational teacher educators. Specific conclusions focus upon professional characteristics while recommendations specify professional development considerations, such as the need for the nurturing of current and future health occupations teacher educators.

Calls for the reform of education have become progressively more frequent and vocal in recent years. Many recommendations for change could impact on vocational education, such as those discussed in the Holmes Group and the Carnegie Commissions reports. Some of the suggested changes could have implications for health occupations education (HOE) teacher educators.

Vocational educators might be understandably concerned about potential reform activities because successful changes are based on knowledge and understanding. How can reform be effectual and meaningful when little is known about vocational teacher education and vocational teacher educators? Lynch conducted a literature search in 1989 and found that little was known about vocational education

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teachers and even less was known about vocational teacher educators. Lynch then conducted a national study of preservice vocational teacher education in order to establish baseline data about where, when, how, to whom, and by whom preservice vocational teacher education was provided. Over 600 teacher educators responded to the questionnaire which focused on program and institutional characteristics and requirements. The study also gathered some data about the demographic and professional characteristics of vocational teacher educators, though no specific disciplines within vocational education were studied.

This study focused on HOE teacher educators and investigated demographic and professional characteristics, educational program characteristics, programmatic and institutional responsibilities, service involvements, research productivity and teaching loads.

Should reform in educational practices and policies be advisable in health occupations teacher education, the data and findings from this study may help to inform and to guide the decision makers. The data could also be used as a basis from which to conduct further study of teaching and teacher education in HOE and vocational education.

Conceptual Framework

Numerous reports have criticized the American educational system citing poor academic performance by students and the lack of quality in the curricula. In the late 80s report from the Holmes Group and the Carnegie Forum of Education and the Economy shifted the focus for the perceived failure of school systems to teacher education.

Research on teacher education is limited (Ashburn, Mann, Barrett, and Schneiderman, 1988; Lanier and Little, 1986; Lynch, 1988; Troyer, 1986). Lanier and Little (1986) stated "...research on teaching teachers stands in stark contrast" to the amount of research on teaching. Lynch (1989, p.3) conducted a search for information on teacher training programs in vocational education and found data "to be practically nonexistent."

Lynch (1989) then surveyed the policies and practices of preservice vocational teacher education programs in colleges and universities. Two questionnaires were used. One instrument was concerned with administrative responses, the other responses from faculty members. A total of 633 vocational teacher

educators responded from 78 colleges and universities.

Lynch reported that the vocational teacher education professoriate had an average age of 49 years, with more males (71%) than females (29%). The faculty was predominantly white (91%) with a small number of blacks (6%) and other minorities (3.5%). In terms of faculty status, the respondents were professors (38%), associate professors (30%), assistant professors (23%), and instructors or lecturers (9%). Nearly all (98%) were employed full-time. Over half were tenured (68%) with 18 percent nontenured but on a tenure line. Of those teacher educators with a terminal degree (24%), there was an even split between the PhD and the EdD degrees. Fourteen percent had completed a master's degree. The generic area of vocational education represented 23 percent of the respondents' area of study and that number. Those respondents also indicated that they had been employed for more than 16 years at their current institution. The range of their experience was from one to 41 years. All traditional disciplines within vocational education were represented in the major area of study except HOE.

The study also examined academic productivity. Lynch found that the educators indicated an average of 58 percent of their time was involved with teaching, 18 percent in scholarship and 24 percent in service. The respondents reported that they spent more time in service and teaching and less in scholarship than either they or their institution desired. Over 69 percent of the educators taught an average of 3.3 undergraduate vocational courses during and academic year with almost half of them teaching an average of four courses. In addition, nearly 49 percent of the respondents indicated that they taught two graduate courses in an academic year.

Only 24 other studies were found in the topical search on vocational teacher educators conducted for this study. Those studies focused on critical issues in vocational education (Herr, 1985; Smith et al, 1986; Zellner and Farrish, 1986;). One study involved inservice teacher education models (Alvine, 1990) and three studies were concerned with professional affairs (Kienast and Lovelace 1981; Posner and Halbrook, 1985; Vaughn et al, 1986). There were eleven studies conducted on agricultural education (Barrick et al, 1983; Blezek, 1986; Gartin et al, 1989; Foster and Horner, 1988; Hedges and Straquadine, 1987; Hillison, 1982; Hotrlik and Leele 1985; McCracken, 1983; Miller and Dlamini, 1987; Nelson, 1986;

Yahya and Moore, 1988). Studies involving the disciplines in vocational education were as follows: one in home economics education (LeBleu and Daniels 1987), two in marketing education (James and Dearle, 1985; Louisiana State Department of Education, 1983), and two in trade and industry education (Anderson, 1986; Drennan, 1985).

An ERIC search failed to disclose any literature on HOE teacher education and/or teacher educators. This finding supports the statements by Lynch (1989) discussed earlier. This study was conducted to create a baseline of information about HOE teacher educators.

Methodology

A broad based national survey of HOE teacher educators was determined to be appropriate because of the lack of any other baseline data. A mail survey was selected as the vehicle for the collection of data.

Population

The Directory of Teacher Educators with Supervisory Responsibility for Health Occupations Education Programs was utilized to identify the population listing. The entire national population of HOE teacher educators was sent a questionnaire.

Instrumentation

The survey instrument was drafted, reviewed and field-tested. Required improvements and revisions were made in the substance and instrument format. The instrument consisted of 49 forced choice items which represented demographic characteristics, programmatic and institutional activities, and teaching, service and scholarly activities. Demographic characteristics included gender, age, ethnicity, initial and current salary, initial and current rank, and tenure status. Programmatic and institutional activities included committee and leadership involvements, and administrative responsibilities. Service, teaching and scholarly activities items addressed levels of involvement, load and productivity.

Data Collection

A cover letter explaining the purpose of the study, a copy of the instrument, and a stamped noncoded return envelope were mailed to each individual identified as the study population. A follow-up letter encouraging completion of the instrument was mailed approximately two weeks after the initial mailing.

Data were received from 28 of the 45 persons in the study population. Three individuals returned the questionnaires stating that they were inappropriately identified as health occupations teacher educators and therefore were not completing the instrument. The 25 remaining questionnaires provided the basis for this study.

Data Analysis

Data were analyzed using measures of central tendency by category or interval and Pearson correlation coefficients. Computer analyzes were performed using selected subprograms of the SPSSx statistical program. Numbers in the tables do not always total 25 because of the failure of some educators to respond to all of the items in the instrument.

Discussion of Findings

Twenty eight of the 45 persons identified as having responsibility for teacher education returned the HOE survey questionnaire. Of the total number returned three individuals indicated that they had been inappropriately identified as teacher educators. Therefore the data reported herein are based upon 25 (60%) responses of the 42 appropriately identified individuals.

Demographics

Evaluation of the demographic information revealed that more women (60%) than men (40%) were HOE teacher educators. The average age of the respondents was 46 years old, with a range from 36 to over 55 years of age. Faculty members were predominately white (96%) with Asian-Pacific Islands representing a 4 percent minority. Table 1 summarizes these data by age, gender and ethnicity.

Table 1

Age, Gender, and Ethnicity of HOE Teacher Educators

	Frequency	Percentage
Age		
36-45	4	16%
46-55	10	40
over 55	11	44
Gender		
female	15	60
male	10	40
Ethnicity		
white	24	96
Asian-Pacific	1	4

Teacher Educator/Institutional Characteristics

The institutional settings where the teacher educators worked varied considerably. Twenty-three respondents were employed in a university setting with thirteen (52%) indicating the institution was a comprehensive university and ten (40%) that of a research university. Of the remaining two respondents, one was located in a four year liberal arts college and the other in a state department of education. The vast majority (80%) of respondents were employed within a School of Education at their institution. One each were employed within a School of Allied Health, Science department, School of Technology, Professional School, and Extension Instruction.

Inquiries regarding the respondents' initial salary at their current position disclosed a range from $20,000 to more than $45,000. The mode was greater than $45,000. Forty percent of the teacher educators stated that pay increases were given across the board. Eight (32%) specific that increases were based on merit considerations. Seven (28%) indicated both forms of pay increases were used by their institution. Table 2 shows data on salaries status and methods of salary increases.

Table 2

Current Salaries and Pay Increase Methods

	Frequency	Percentage
Current Salary		
$20,000-24,999	2	8%
25,000-29,999	0	0
30,000-34,999	6	24
35,000-39,999	4	16
40,000-44,999	5	20
greater than 45,000	8	32
Pay increase method		
merit	8	32
across the board	10	40
combination	7	28

Forty eight percent of the respondents received appointments as assistant professors when initially employed at their current institution. Other designations were instructors (20%) and lecturers (8%). One person (4%) was hired as a consultant, another as a curriculum specialist and a third as an administrator.

The majority of the respondents currently held the rank of associate professor (40%) or assistant professor (24%). Two persons had attained the rank of professor, two adjunct professors and two the rank of instructors. The other three respondents had designations of consultant, administrator, or curriculum specialist. Tenure has been attained by 12 (48% of the HOE educators, with an equal percentage remaining nontenured. One participant in the study did not respond to this item. Table 3 reports the data related to rank and tenure status.

Program Characteristics

A significant majority (84%) of the programs with which the HOE were affiliated offered secondary school teacher licensure. A smaller majority (52%) offered certification for non-secondary teacher licensure. Table 4 provides the data related to certification.

Table 3

Current Appointment and Tenure Status

	Frequency	Percentage
Current rank		
Instructor	2	8%
Assistant Prof	6	24
Associate Prof	10	40
Professor	2	8
Adjunct Prof	2	8
Consultant	1	4
Curriculum Spec	1	4
Administration	1	4
Tenure Status		
Attained	12	48
Not attained	12	48
No response	1	4

Table 4

Certification Offered in Program

Certification level	Frequency	Percentage
Secondary certification		
Offered in program	21	84
Not offered	2	8
Post Secondary certification		
Offered in program	13	52
Not offered	2	8
Not required	3	12

The degrees awarded by HOE teacher education affiliated programs were diverse. The largest number of programs offered a Bachelor and Master of Science. Three programs awarded just a Bachelor of Science. Two programs offered a Bachelor and Master of Science and a Doctorate or a Bachelor of Science and Master of Arts. Table 5 provides a complete listing of the degrees awarded.

The number of undergraduates in programs varied with 61 percent of the respondents indicating a program size of 25 or less. In contrast, 17 percent of the programs reported a student population between 51 and 75. Programs appeared to have either enrollments of more than 75. Programs appeared to have either enrollments of more than 75 or less than 25 students.

The number of graduate students enrolled in programs also varied. Eleven programs reported 25 or less students. Four had 51 to 75 students enrolled and three programs had from 26 to 50. Sixty four percent of the graduate programs reported fifty or less students. The data are shown on table 6.

Table 5

Degrees Awarded By Programs

Degree	Frequency	Percentage
Bachelor of Arts	2	8
Bachelor of Education	1	1
Bachelor of Science	16	64
Master of Arts	3	12
Master of Education	3	12
Master of Science	12	48
Doctorate	3	12

Note. Columns do not add up to twenty-five and 100% respectively because of multiple responses. Also, one program awarded continuing education credits and another gave a teaching credential.

Responsibilities for undergraduate student advisement was reported by 84 percent of the teacher educators. Four advised more than 50, while 67 percent of the respondents stated that they advised 50 or less. Eleven indicated that they were responsible for 25 or fewer students.

Table 6

Student Enrollments in Programs by Level

Level	Number of Programs	Percentage
Undergraduate		
1-25	14	56%
26-50	3	12
51-75	2	8
>75	1	16
Graduate		
0	2	8
1-25	11	44
26-50	3	12
51-75	4	16
>75	1	4

Note. Columns do not indicate 100% response to item because of multiple responses.

The number of respondents providing graduate advisement also varied with eight reporting no advisement responsibilities. Approximately 75 percent of the respondents stated that they had 25 or fewer graduate advisees, as is noted on Table 7.

Teaching, Service, Scholarly, and Administration Characteristics

Inquiries about work load showed that HOE teacher educators varied in the amount of time they spend teaching, performing service functions, and scholarly and administrative activities. Seven respondents (28%) indicated that they taught two courses per week and five (20%) taught three courses. There were three respondents (12%) that taught four courses and four (16%) that taught more than four courses.

The number of class sessions convened per week ranged from one to more than four, with six respondents (24%) indicating that class sessions meet twice per week. Depending upon the class, four educators met with their students once per week or more than four times a week, while the majority of the respondents (91%) indicated that they held classes four times per week or less. See Table 8 for the data.

Table 7

Number of Student Advisees of HOE Faculty

Advisees per faculty	Frequency	Percentage
Undergraduate students		
0	3	12%
1-25	11	44
26-50	5	20
51-75	3	12
76-10	1	4
>100	1	4
Graduate students		
0	8	32%
1-25	11	44
26-50	4	12

Table 8

Number of Undergraduate and Graduate Courses Taught per Semester

Courses	Frequency	Percentage
Undergraduate		
1	8	32%
2	6	24
3	5	20
4	2	8
>4	2	8
Graduate		
0	3	12%
1	12	48
2	2	8
3	4	12
4	0	0
>4	1	4

The number of undergraduate courses taught by teacher educators per semester ranged from one to more than four, with an average of 2.3 courses. Most (86%) of the respondents taught from one to three undergraduate courses each semester. In addition nearly half (48%) of the respondents also were responsible for teaching at least one graduate course per semester. The average number of respondents taught 2.3 graduate courses, and more than half (64%) had one to three courses.

Fifty percent of the respondents were responsible for courses specific to health occupations education, while 42 percent taught interdisciplinary courses which were taken by students training to teach HOE. One respondent indicated teaching a combination of health occupations and interdisciplinary courses.

The number of students enrolled in courses taught by HOE teacher educators ranged from one to more than thirty. Typical class size was from 11 to 20 students. Eighty two percent of the classes composed of 20 or fewer students. Eight teacher educators (32%) typically had less than 10 students in their class. Only four respondents indicted that their typical class size was greater than 30 students. Table 9 contains data related to class size.

Table 9

Average Class Size

Class Size	Frequency	Percentage
1-10	8	32%
11-20	10	40
21-30	2	8
>30	2	8

HOE teacher educators reported serving on institutional, school and programmatic committees. A majority (80/5) of the respondents reported serving on one to four committees and on additional ten percent were on up to six committees. One teacher educator indicated having responsibilities on more than six

committees. More than half (64%) of the respondents were involved with committee activity at the institutional level and 58 percent of the teacher educators stated that they served on one or two school-wide committees. An additional 21 percent served on three or four committees. Service at the department or program levels was very high with 75 percent serving on one to four committees.

Even though the respondents reported considerable committee involvement, few teacher educators had leadership roles on those committees. Only one respondent (4%) cited being chairperson of an institution-wide committee and five (21%) served at the school wide level. Nine respondents (37%) served as a chairperson of a department or a program. The vast majorities (96%, 79%, and 63%) did not report any leadership responsibilities on committees at the institutional, school or department/program levels respectively. Table 10 contains the data related to committee membership and leadership.

Investigation of other service activities revealed that over half of the respondents (58%) served on thesis committees. Nine teacher educators were on at least three or more committees. Others (42%) indicated that they had not served in this capacity during the time period investigated by this study.

Examination of health occupations teacher educators' service to government and other public agencies disclosed that a majority of the respondents (83%) had involvement at the state level. Over half (67%) of the educators also stated that they participated in service activities with public agencies. Over two thirds of the educators reported that they were involved with state and local organizations in leadership capacities. The largest number (75%) reported holding a national office.

Publication activities in "scholarly publications" were relatively constant for the two year (52%) and five year period (55%) investigated by the study. Two respondents reported more than four articles were published in that time period. Almost the same number (46%) had articles published in non-refereed journals. By contrast, nearly 75% of teacher educators had articles published in refereed journals during the past five years while only 59% of the respondents had articles published in non-refereed journals.

Other activities associated with publication were reported. Five educators stated that they had chapters published in a book. Seven indicated that they had a book published within the two year period preceding the study. Six individuals conducted book reviews within two years. while eight did so within

Table 10

Number of Committees: Participation and Leadership

Committee Type/ Leadership	Frequency	Percentage
Institutional committees		
0	3	12%
1-2	16	64
3-4	3	12
5-6	0	0
>6	1	4
School committees		
0	3	12%
1-2	14	56
3-4	5	20
5-6	2	8
>6	0	0
Dept./Program committees		
0	3	12%
1-2	15	60
3-4	3	12
5-6	2	6
>6	1	4
Service as Chairman		
Institutional committee		
0	22	88%
1-2	1	5
School committees		
0	19	76%
1-2	5	20
Dept./Program committee		
0	15	60%
1-2	6	24
3-4	3	12

the past five years. Half of the respondents stated that they had served on the editorial board of refereed journals while five reported having been an editor of a refereed journal. This information is found in Table 11.

Table 11

Number of Publications in Refereed and Non-refereed Journals per Two and Five Year Periods

Time frame	Frequency	Percentage
Refereed Journals		
Publications within last two years		
0	11	44%
1-2	8	32
3-4	3	12
>4	2	8
Publications within last five years		
0	6	24%
1-2	4	16
3-4	7	28
>4	6	24
Non-refereed		
Publications within last two years		
0	11	44%
1-2	10	40
3-4	0	0
>4	1	4
Publications within last five years		
0	9	36%
1-2	7	28
3-4	4	16
>4	2	8

An identical number (72%) of health occupations teacher educators submitted papers for presentations during the two and five year periods of time investigated by this study. During the two year period, 33 percent of the respndents submitted up to two papers and during the five year period 38 percent

submitted more than four papers.

There was similarity in the number of educators giving presentations during the two year period (92%) and the five year (96%) preceding the study. Two respondents reported giving no presentations for the two year period and only one for the five year time frame. See Table 12.

Table 12

Number of Presentations Given per Two and Five Year Periods

Time frame	Frequency	Percentage
Presentations given within last two years		
0	2	7%
1-2	7	28
3-4	8	32
>4	7	28
Presentations given within last five years		
0	16	4%
1-2	3	12
3-4	4	16
>4	15	60

Health occupations teacher educators reported being recognized for their service and accomplishments. Nearly 75 percent of the respondents were recipients of professional awards or honors.

A major number of respondents (70%) identified a variety of administrative responsibilities involved with planning and implementing change. Sixty three percent had some involvement with the application of new instructional technologies. Approximately one-third of the respondents were instrumental in the design of new academic programs. Only three educators reported having no administrative functions. Three individuals served as department chairs, nine were program directors or coordinators, and one was an assistant dean.

In addition to the investigation reported above, correlations between the study variables verified the assumptions posed by the researchers. Significant direct relationships were found between age and current salary, current rank, service or department committees, service as an officer at the national level, service as a journal editor and the number of scholarly publications in both the two and five year time periods. In essence, salary, rank, service and publications increased with age. Similarly, as academic rank progressed toward professor, service increased on institutional, school, and departmental or programmatic committees. Current rank was linked directly with the receipt of awards and honors, and as the educators progressed higher into the ranks, the number of awards increased. See Table 13.

Table 13

Correlations of Selected Variables

Variables	Coeff.	Var.	Signif.
Age with Current Salary	.528	.603	.003
Age with Current Rank	.480	.698	.008
Age with Service on Dept./Program Committees	.511	.544	.005
Current Rank with Service on Institutional Comms.	.614	1.569	.001
Current Rank with Service on School Committees	.679	1.717	.000
Current Rank with Service on Dept./Program Comms.	.363	.971	.041

Note. Pearson Correlation coefficients are used.

Conclusions and Reccommendations

This study revealed that sixty percent of health occupations teacher educators were female, white (96%), and with an average age over 46 years of age. Most held a faculty status of associate professors (49%) or assistant professors (24%). Only two held the rank of full professor. An equal percentage (48%) were tenured and non-tenured. Ninety two percent were employed at a comprehensive or research

university, with 80 percent identifying a School of Education as their academic home.

Academic productivity was demonstrated. The average course load was 2.3 undergraduate courses per semester, with meetings approximately three times per week. Nearly 55 percent of the respondents also teach 2.3 graduate courses per semester.

When comparing the findings of the study to those of Lynch's baseline data for vocational teacher educators, it is noteworthy that while health occupations teacher educators shared some similar characteristics with vocational educators, there were differences as well. The ethnicity of both groups was predominately while and both indicated an average salary in the high $30,000s. Health occupations teacher educators were slightly younger (approximately three years) and predominately female, in contrast to Lynch's finding. Whereas the Lynch data revealed 68 percent had achieved tenure, only 48 percent reported being tenured in this study.

A comparison of academic productivity also revealed differences. The Lynch baseline identified an average course load of three undergraduate and two graduate courses per academic year. The study found that HOE teacher educators taught 4.6 undergraduate and 4.6 graduate courses in an academic year. The comparison showed that HOE teacher educators carry a much heavier teaching load than vocational teacher educators, yet fewer of them have achieved tenure. The comparison of service activities corresponded to the Lynch baseline date, although the two studies approached the topic differently.

Scholarly activities appeared to be the domain of older members of HOE teacher educators. Service to the institution, school and department or program via committee participation also was related to the age of the members.

Based upon the findings of this study the following conclusions are derived:

1. A HOE teacher education faculty member is similar to, yet distinctly different from the vocational teacher education professoriate described by Lynch in his baseline study.
2. HOE teacher education faculty baseline data should be recognized and incorporated into a generic vocational education baseline if an accurate picture of vocational teacher educators is to be obtained.

Five recommendations result from this study, as follows:

1. A study of all HOE teacher educators should be conducted to describe thepopulation more accurately. (The participant rate of over 60% is noteworthy,but greater accuracy would be derived by full participation.)
2. Comparative evaluation of the findings of this study to individual status,scholarly productivity, and teaching load would be helpful in programmatic,school and institutional negotiations.
3. Attention should be focused upon the apparent differences in academic rank andtenure status between HOE teacher educators and those of the other vocationalareas. Apparent inequality should be studied.
4. Professional development and/or assistance and support for HOE teachereducators seeking to attain the rank of full professor should be provided. Thedisparity between HOE teacher educators and generic vocational educationfaculty in the achievement of full professorship needs to be addressed.(National professional associations such as the Association of Health Occupations Teacher Educators and the American Vocational Association needto be alerted to the needs of the HOE faculty members.)
5. Future HOE teacher educators should be identified and supported in their effortsto become faculty members. Because the current pool of HOE teachereducators is "greying," an apparent need for HOE teacher educators may become a crisis in the near future.

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FACTORS FRESHMEN RADIOGRAPHY STUDENTS CONSIDER IMPORTANT IN MAKING CAREER AND PROGRAM DECISIONS: IMPLICATIONS FOR RECRUITMENT AND MARKETING STRATEGIES

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FACTORS FRESHMEN RADIOGRAPHY STUDENTS CONSIDER IMPORTANT IN MAKING CAREER AND PROGRAM DECISIONS; IMPLICATIONS FOR RECRUITMENT AND MARKETING STRATEGIES

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Abstract: There has been considerable evidence of the need for a variety of health personnel. For many educational programs there also exists the need to increase the quality and quantity of applicants. One method to provide such increases is through the use of a variety of recruitment and marketing techniques. Unfortunately there is little information regarding student demographics, career and program choice factors to determine which methods are feasible. This study utilized a national sample of freshmen radiography students to examine demographic data and factors which affected career and program choice factors. The data are discussed in terms of implications for each upon possible marketing and recruitment strategies.

The health industry is one of the fastest growing in the United States. The total amount of money spent on health care in 1980 was 248 million dollars, by 1990 that amount increased to 647 billion (Raffel & Raffel, 1989). A recent report by the Institute of Medicine (1989) indicated a continued demand for personnel in a variety of allied health occupations. It predicted that by the year 2000 the demand for personnel would be greatest for Physical Therapists' (+75%), Occupational Therapists' (+52%) and Radiographers' (+65%). The study indicated that for each area, the supply of graduates was considerably less than the current or future demand.

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The Committee on Allied Health Education and Accreditation (AMA, 1990) reported that radiography programs graduated 6,528 students in 1989; the greatest number of graduates of all 26 allied health program areas under their purview. Although radiography graduates constitute the largest percentage of students each year relative to other allied health areas, the data on enrollment and program numbers over the last decade indicate a lessening of supply. The number of radiography programs declined 27% (915 to 666) from 1976 to 1989 (AMA, 1990). Fluctuation occurred over the last decade in the number of graduates each year. A good measure of supply can be made by comparing the mean number of graduates from 1980-1984 ($x = 7321$) to those from 1985-1989 ($x = 6552$). There was a 10.5% decline in the mean number of radiography graduates during the second half of the 1980's.

A report by the Summit on Manpower (1989), a collaborative effort of 17 national radiologic science organizations, reported that from 1985 to 1988 there was a decrease of 11% in the number of radiography programs and an 18% decrease in graduates. The Institute of Medicine Study (1989) indicated that even if the decline in programs and graduates could be halted, strong adjustments in the labor market would be needed to avoid significant shortages through the year 2000.

In a survey of allied health program directors (Parks, 1990), 49% of the radiography educators indicated that the number of applicants to their programs remained the same or decreased. The Institute of Medicine report states that radiography, in addition to three other allied health areas, "average only slightly more applicants than needed to fill their classes" (1989, p. 160). Rosenthal (1990) in a study of factors responsible for the closing of 814 allied health programs over a seven year period (1983-1990), reported declining applicant pool and declining enrollment as the two most frequently cited reasons.

It is difficult to attempt to attract greater numbers of students during a time when the number of applicants is low. Recruitment and other marketing strategies are becoming popular methods utilized by educational programs to increase applicant pools. In a study of trends and issues in allied health education, radiography program directors ranked, improved recruitment, third out of 16 factors that

could have a significant impact upon student enrollment (Parks, 1990). The first two factors were employment opportunities and salary potential. These factors are influenced directly by the clinical environment.

There are a number of techniques that can be used directly by educational institutions to attract students. Successful student recruitment efforts generally depend upon positive market signals that arise from the work area. To the extent that potential students incorrectly believe that a career is unsatisfactory, the problem may be improved by better communications. Additionally, recruitment activities can provide potential students with an awareness of the types of careers in the health care field.

Often educational programs have limited financial resources to spend on marketing strategies. Thus, limited funds must be used more effectively. There are a number of places to start, but it can be beneficial to first question new students entering the profession to gain insights from their career decisions. Obtaining data from new students can provide the basis for rational decision making related to developing marketing strategies and effective use of limited financial resources. Purpose of Study

The purposes of this study were to examine demographic data, factors related to career and program choice, and future work plans of first year radiography students.

The following research questions were developed based on the above purposes:

1. What are students' age, gender and race?
2. What factors are important to students in making their career choice?
3. From what sources did students receive information that was beneficial in helping them make their decisions about radiography as a career?
4. What factors are important to students when selecting a particular radiography program?
5. What are students' future work plans?

Since Radiography has a dual educational entry system (hospital and college) each question was examined by program sponsorship.

Methodology

Population

The population identified for this study consisted of all freshmen students attending accredited radiography programs in the continental United States (AMA, 1990). The sample consisted of all first year radiography students in 46 randomly selected programs (7%), stratified by region and sponsorship (hospital and college). Since a relatively small percentage of the population was sampled, stratification was performed to attempt to make the sample as representative as possible of the population. Only freshmen students in certificate (hospital) or associate degree (college) programs were used in this study.

Instrumentation

Since an instrument did not exist in radiography to measure the areas of interest, a three-page questionnaire was developed after consultation with radiographer educators, clinicians and students. The questionnaire was pilot tested on three groups of students in three different radiography programs not involved in the study. Changes were incorporated to eliminate ambiguities prior to mailing to the research sample. Half the pilot test group completed the questionnaire again one month after the initial administration. The results of the repeated questionnaire were examined for consistency of response. The coefficient of determination was .75.

There were 19 questions related to four major areas; eight demographic questions, six career/program choice questions, three future work plans questions and two open-ended questions regarding students' present thoughts on radiography as a career.

Data Collection

The directors of the 46 programs selected for the study were contacted by telephone. They were asked if they would be willing to distribute questionnaires to all freshmen students and return them

in a postage paid response envelope. All 46 directors agreed to participate. They were mailed one envelope containing the appropriate number of questionnaires and a cover letter explaining the purpose of the study and the directions as previously discussed during the telephone conversation. Forty-six envelopes were returned with a total of 492 usable questionnaires.

Data Analysis

Descriptive statistics were used to analyze the data. Frequency distributions allowed the investigators to report the most frequently occurring responses in a variety of categories and to examine patterns in the distribution of responses. Means were also used with appropriate variables. Data were analyzed using version 6.04 of PC-SAS (SAS Institute Inc., 1987).

Results and Discussion

Students Age, Gender, and Race

Table 1 reports the mean age for the total sample and each sponsored program. Although the mean age of the three groups were similar, further examination revealed 23% of the students in college programs were 30 years of age or older compared to 14% of the students in hospital programs. Thus, college programs had a greater percentage of older students.

Table 1

Mean Age of Students

Group	N	Min	Max	Mean	Std Dev
Sample	491*	17	52	24.5	6.6
College	258	17	52	25.5	6.7
Hospital	233	18	49	23.3	6.2

*One participant did not respond.

The gender distribution of the sample was 75% female (n = 368) and 25% male (n = 124). This reflects the gender difference of the profession (Reid, 1991a). There was a small difference in the

gender breakdown by sponsor with slightly more males in the college group (27.4%) than the hospital group (22.7%).

The race of responding students is reported in Table 2. The percentage of minority students (15%) was slightly more than that reported by Reid (1991b) for the profession (11%). Examining race by sponsor, hospital programs had a 6.9% minority student representation and college programs had a 22.1% minority student representation. A chi square test performed on race and program sponsor indicated significantly fewer minorities attended hospital programs than college programs ($x2 = 22.01$, $df = 1$, $p < .001$).

Table 2

Race of Students*

Race	N	%
White	416	85.1
Black	25	5.1
Hispanic	29	5.9
Asian	14	2.9
Other	5	1.0

*Three participants did not respond.

Factors Important in Students Career Choice

Students were asked to rate the importance of ten different career choice factors. There was also an other category in which students could list and rate additional factors. Therefore, the total number is different for each ranking. Table 3 displays the student ratings for each career factor.

Table 3

Ranking of Career Choice Factors

Career Choice Factor	Important	Not Important	Total
Availability of Work	477 (97%)	13 (3%)	490
Nature of Work	471 (96%)	19 (4%)	490
Helping People	460 (94%)	31 (6%)	491
Advancement Opportunity	455 (93%)	34 (7%)	489
Financial Rewards	430 (88%)	61 (12%)	491
Type of Patient Contact	365 (75%)	123 (25%)	488
Use of Complex Equipment	344 (71%)	143 (29%)	487
Enjoyment of Sciences	255 (52%)	233 (48%)	488
Knowing Someone in Field	173 (36%)	312 (64%)	485
Using Computers in Work	115 (24%)	371 (76%)	486

Two of the top four factors in Table 3 are considered extrinsic-availability of work and advancement opportunities. The remaining two, interesting nature of work and opportunity to help people, are considered intrinsic factors. Financial rewards, an extrinsic value, ranked 5th. The use of computers was considered unimportant by 76% of the students. Knowing someone in the field and enjoyment of science classes were not important career choice factors for the majority of students. The other category was not included in Table 3 due to the very small response rate (n = 14). Examination of career choice rankings by sponsorship found all ten factors equal for both hospital and college programs.

Sources of Career Information

Another question asked students to rank order the top three factors which were most beneficial in helping them learn about the profession of radiography. There were 11 factors. Table 4 is a frequency listing of the factors that students considered most important in helping them learn about radiography. These factors represent 68% of the responses.

Table 4

Sources of Career Information: First Choice of Most Important Factors

Factors	N	%
Family Member	109	22
Previous Health Care Employment	73	15
Radiography Student/Graduate	54	11
College Catalogue/Publication	49	10
Other Health Professional	47	10

Factors considered by respondents as second most important in learning of the profession contained four items common to those in Table 4. The similar factors were: family member, radiography student/ graduate, college catalogue publication, and other health professional. All of these factors combined, with the exception of previous health care employment, were selected by students as the most important (53%), as second most important (52%), and the third most important (49%).

Table 5 lists the second most important factors. Three of the factors were personal contacts. A hospital tour or visit was ranked as the second most important factor by 19% of the students and third most important factor by 18% of the students. Sources of career information by program sponsorship were very similar. Family member and previous health care employment were ranked one

and two respectively by students at hospital and college programs. College program students ranked college catalogue/publication third (13%) while hospital students listed radiography student/graduate as third (14%).

Table 5

Sources of Career Information: Second Choice of Most Important Factors

Factor	N	%
Hospital Visit or Tour	86	19
Other Health Professional	78	17
College Catalogue	56	12
Family Member	55	12
Radiography Student/Graduate	49	11

Factors Important in Students' Program Selection

Students were asked to rate 11 factors regarding their importance in the selection of their current program. Table 6 contains students' rating of each factor. When comparing reasons for student program selection by sponsor, two factors had very different rankings. Cost of education was ranked first by college program students (83%) compared to sixth by hospital program students (78%). Hospital program students ranked reputation of the institution second (88%), compared to college program students, who ranked it sixth (77%).

Students Future Work Plans

Eighty-six percent (n = 421) of the students planned to work as staff radiographers after graduation. Forty-three percent planned to work no more than six years in this position. Ninety-one percent (n =449) of the students indicated a desire to work in a specialty area of the radiologic sciences

Table 6

Students' Rating of Factors Related to Program Selection

Factors	Important	Not Important
Quality of Faculty	404 (84%)	75 (16%)
Faculty Willingness to Assist/Advise	403 (84%)	77 (16%)
Reputation of Institution	392 (82%)	86 (18%)
Location	391 (82%)	89 (18%)
Opportunity to Continue Education	389 (82%)	85 (18%).
Cost of Education	385 (80%)	95 (20%)
Personal Responses to Communication	289 (61%)	183 (39%)
Financial Aid/Scholarships	245 (51%)	232 (49%)
Suggested by Advisor	148 (32%)	316 (68%)
Know a Graduate	125 (26%)	352 (74%)
Friends Attending	72 (15%)	407 (85%)

(Table 7). Ultrasound was the most popular specialty. Only hospital program students differed in their ranking of future specialty work compared to the total sample. They listed MRI first (25%) and ultrasound second (22%).

When asked the job title, respondents expected to have for most of their career, staff radiographer (21%) represented the largest category, followed by manager (18%), and ultrasonographer (14%). All other categories were less than 7.5%.

Fifty percent of the students in the sample indicated that they eventually wanted a baccalaureate or higher degree. The previous statistic is interesting because all the respondents were enrolled in certificate or associate degree programs. The only differences in students' work plans by sponsorship were future educational plans and specialty practice rankings. Fifty-five percent of the

Table 7

Future Specialty Work

Specialty	N	%
Ultrasound	130	29%
Magnetic Resonance Imaging	101	22%
Radiation Therapy	65	15%
Computed Axial Tomography	62	14%
Vascular Specials	58	13%
Nuclear Medicine	33	7%

college program students planned to seek a baccalaureate or higher degree, compared to 45% of the hospital program students.

Discussion

The mean age of freshman respondents was 25, with little difference between hospital and college programs. Only 36% of the students were between the ages of 18 and 20. Even accounting for programs that require students to obtain prerequisites before acceptance into the major, it would seem that most students did not enter radiography education immediately after high school graduation. Fifty-five percent of the respondents did not choose radiography as their first career choice; another factor that may partially explain the low percentage of students directly entering a program from high school. It would seem that any marketing or recruitment strategies focusing solely on the secondary school environment would neglect a significant number of persons that may have an interest in the profession. With 23% of the students age 30 or over, strategies to reach older nontraditional populations would be useful.

While the percentage of minorities (22%) in college programs was representative of the national population, it was not representative of the profession. Efforts to attract and retain minority

students need to be developed, particularly in hospital programs. Reid (1991b) reported an 11% minority representation in the profession. Hospital programs had significant less minority students (7%). Lewis, Gaines, and DeGarcia (1989) offered useful suggestions in the development of minority recruitment strategies that worked at their institution. They established a four-phase approach that includes awareness activities, inquiry activities, application activities and deposit activities. Struggs (1981) suggested that a marketing approach begins with an assessment of students' (or clients') needs and wants. In this study, students' needs were assessed by their responses to a variety of factors related to career choice. Respondents indicated that availability of work (97%) was first choice in most important factors in choosing a career. The second, third, and fourth rankings of factors were nature of work (96%), helping people (94%) and advancement opportunities (93%). Regardless of the marketing techniques used, it is necessary to incorporate information on the profession that relates to the important career choice factors of students.

Potential students need to be informed of the high demand for radiographers that currently exists in most parts of the country. Three of the top five career choice factors were extrinsic values (availability of work, advancement, and pay). It is important in marketing strategies to describe these factors as they relate to specific program regions. It may also be important to assess career barriers and develop strategies to reduce them. In an attempt to address the problem of declining enrollments and barriers to entry, the radiography program at Bunker Hill Community College in Charlestown, Massachusetts adopted a part-time late afternoon/evening program (Cauble, 1990). A collaborative effort between the program, health care institutions, and the community provided visibility, funding, and access. The two tract program, full-time and part-time, has responded to enrollment barriers, while attracting a significantly larger applicant pool.

In examining the sources of students' career information, the most important sources in rank order were: family member, hospital visit or tour, and other health professional. Thus two of the three factors were personal contacts. It is important in marketing a program to reach prospective student and to educate the community about the program's existence and usefulness. Since personal contacts

were important to students choosing radiography, knowledge of the program and its purpose should also be reaching appropriate community citizens, employers and agencies; they, in turn, may serve as the initial information source for many students.

Important factors related to program selection focused primarily upon the institution's faculty, reputation, location, and cost. Opportunity to continue education was also in the top six rankings. Institutional reputation and that of its faculty is situational, specific, and to a certain extent dependent upon organizational advancement strategies.

Educational cost is usually a significant consideration for many students. The cost factor was more important for college students than for those in hospital programs. A number of health related programs have agreements with local health care institutions to offer scholarships or pay for the educational expenses of a predetermined number of students. Five Atlanta hospitals pay 60% of the annual tuition of 40 Emory University nursing students who agree to work at the hospitals after graduation (Dodge, 1991). Similar arrangements have been instituted in a variety of health care programs.

Students' future work plans are also factors that can have an effect upon recruitment strategies. Most respondents (91%) indicated a desire to work in a specialty area of the radiologic sciences in the future. Institutions that have such specialty programs or internships could attract additional applicants. The availability of such specialty programs locally could be an advantage also.

Since 50% of the sample wanted to eventually obtain a baccalaureate or higher degree, the opportunity to transfer to a college in the area could be very attractive. Established linkages between radiography programs and four-year educational institutions designed to enable students to obtain the baccalaureate degree would probably be viewed as beneficial to students; especially baccalaureate programs in the radiologic sciences. There are a tremendous number and variety of marketing techniques that can be utilized to attract students. Topor (1986) offers six steps to creating a marketing plan. It is important to remember that a plan can be basic or complex; time and money are usually the primary determinants. The component of interest for this example is programmatic student recruitment.

The first and most important step is to review results of the program's market research. The data may be simple surveys of graduates, current students, new applicants, high school students or a combination of the four. It may be a more complex review of the market patterns and trends of a larger group. It is important to identify demographic information and reasons for attending a program. Whatever approach is used, it is important to note the trends and relationships revealed by the data.

The second step for the program is to establish goals related to student recruitment. Is the goal to maintain or expand enrollment? Is the goal to attract a different type of student? The third step is to develop specific objectives related to the established goals. The fourth step is to identify the target audience. The list may include primary and secondary groups. Too often the shot gun approach is utilized without data or a target audience.

The fifth step is to develop specific strategies to reach the target audience based on the goals and objectives. In this step, cost is often a factor. Consulting a variety of media experts can help in the decision process. The last step is to mix the media. If money is available, a combination of media may be effective in communicating with the target audience.

Conclusions, Implications and Recommendations

Conclusions

The following conclusions were drawn based on the data:

1. The mean age of freshmen radiography students indicates that a significant percentage have not entered programs immediately from high school. The predominant gender is female. Minorities are underrepresented in hospital programs.
2. The most important factor in students' career choice was availability of work (97%), followed closely by nature of the work (96%), opportunity to help people (94%), advancement opportunities (94%) and financial rewards (88%).

3. The sources of career information most important to students in making their career decision were family members, hospital visit or tour, and other health professionals.
4. The factors most important in students' selection of a particular program (in rank order) related to the institution's faculty, reputation, and location. Also, opportunity to continue education and location of institution were important.
5. The majority of students (86%) planned to work as staff radiographers after graduation. Most respondents (91%) indicated a future desire to work in a specialty area of the radiologic sciences. Fifty percent of the students planned to eventually obtain a baccalaureate or higher degree.

Implications

The findings of this study have a number of implications for radiography educators and others interested in maintaining and enhancing the applicant pool. There is currently a high demand for practitioners in the radiologic sciences. The data from this study may be helpful in providing some information for a variety of marketing strategies that can be used to attract more students or reduce declines in some applicant pools. Radiography and other allied health programs need to conduct market research related to their clientele. The demographics of a decade ago are changing and educational programs need to face the realities of a changing student population.

Recommendations

From the data, the following recommendations are offered:

1. Radiography programs are attracting older students (mean age 25). Since a large percentage of students are not entering programs immediately out of high school, marketing strategies need to be developed for an older population.
2. Minorities are under-represented in hospital programs. Strategies to attract and retain these students need to be developed. Further research should examine factors important to minority students in selecting a career. Possible differences need to be identified in

light of implications for recruitment strategies.

3. Students seem to be motivated by both intrinsic and extrinsic factors in regards to their career choice, with extrinsic factors slightly more prevalent. In many cases these factors match practice patterns and opportunities in the radiologic sciences. The message needs to be communicated effectively to potential candidates.
4. Personal contacts comprised two of the three most important sources of career information for students. In addition to potential students as the target audience, community agencies, employers, and citizens need to be aware of the program and what it has to offer students. The network of friends, relatives, acquaintances, and community can all work to communicate information to potential students. In some locations, these networks may be more powerful than traditional marketing techniques.
5. Institutional factors were five of the six main reasons students selected a particular program. This may vary by institution and region, but programs should determine what these factors are and use them to attract potential applicants.
6. Students' future work patterns have implications for future education. A significant percentage of students in this study did not plan to work as staff radiographers longer than six years. Many indicated a desire to enter specialty areas, management positions, or supervisory positions in the future. The availability of education programs locally or regionally that can provide students with transfer opportunities to fulfill their long term career plans can be strong incentives for potential applicants. Community and junior colleges and hospital programs need to develop articulation agreements with other institutions to forge innovative ways through which students may meet their long term career goals.

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FACTORS AFFECTING UNIVERSITY-BASED AIDS EDUCATION EFFORTS AND OUTCOMES

by

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FACTORS AFFECTING UNIVERSITY-BASED AIDS EDUCATION EFFORTS AND OUTCOMES

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Abstract: Florida's state universities, in response to legislative mandates and concerns for college students, have launched a variety of AIDS education initiatives. However, the intended outcomes or changes in students' knowledge, attitudes, and sexual behavior is difficult to determine. This problem was addressed by investigating the efforts and outcomes of AIDS educational initiatives at a state university in South Florida, while uncovering the factors that contributed to these outcomes.

A conceptual framework was developed to guide the initial inquiry and the generation of research questions. The framework provided a visual model of factors that mediate the processes and/or outcomes experienced by the student in response to an AIDS educational effort. These factors are generally categorized as institutional mediators and individual mediators. These mediators share subcategories of: people; circumstances; beliefs; and actions. Individual mediators also included endemic traits of the student. Components of the framework were modified as the study progressed. A qualitative methodology was adopted for flexibility and discovery of variables affecting efforts and outcomes. The study's five phase data collection process encompassed: 1) interviews with administrative and student leadership; 2) surveys of 804 undergraduate students; 3) in-depth interviews with 22 students; 4) review of student interview transcripts by a panel of experts; and 5) extensive analyses of all data.

Findings indicated that students predominantly receive AIDS information from impersonal mass media sources. In contrast to national studies, students at this University lacked proficiency (score of 80% correct or higher) in overall AIDS knowledge, particularly HIV prevention. Statistically significant relationships existed between level of knowledge; condom

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use; and positive attitudes towards people with AIDS. Students wanted more information on HIV prevention, distributed by a variety of methods.

While this study found that students were becoming more knowledgeable, changing attitudes, and testing-out safer sexual behavior; it revealed a need for additional HIV prevention education, administrative support for programming, creative marketing strategies, varied methods for HIV prevention education, and promotion and support for sexual behavior change. The findings of this study are of import to all higher education students including students from the allied health professions, not only from a personal but a professional standpoint since allied health students are often queried by clients and peers about HIV/AIDS transmission and prevention. Specific recommendations were offered for: garnering the support of academic leadership; utilizing effective marketing strategies; expanding the peer education program; and integrating HIV prevention messages throughout the core curriculum.

The purpose of this study was to investigate the efforts and outcomes of Acquired Immune Deficiency Syndrome (AIDS) educational initiatives and to determine different types of variables that contribute to these outcomes. The background of the problem is discussed in reference to college students and the primary research questions are delineated. A review of related research is provided as well as an overview of the conceptual framework. Phases of the study are briefly described along with conclusions and recommendations.

Statement of the Problem

Over the past several years, the academic community has shown increased concern and heightened attention to educating college students to the risk of HIV infection. However, while programs are becoming more commonplace on college campuses, efforts made to assess their impact are inadequate. This inadequacy stems from the fact that in many cases evaluative data merely describes the number of people participating and their cognitive growth in respect to the AIDS information obtained. Consequently, program developers and college administrators lack tangible data

that the ultimate outcome of their AIDS educational efforts is being realized, namely a change in sexual behavior and attendant attitudes of college students. Thus the problem simply stated is: **Florida's state universities in response to legislative mandates and concern for college students have supplied education on AIDS; however, the type of efforts and their effectiveness as well as the intended outcomes or changes in college students' knowledge, attitudes and sexual behavior have not been determined.**

This study addressed this problem by investigating the efforts and outcomes of AIDS educational initiatives at a South Florida state university, while attempting to uncover the types of variables that contribute to these outcomes.

Background of the Problem

By virtue of their behavior, many college students could be considered at high risk for AIDS. Yet, according to Richard P. Keeling, Chairman of the College Health Association's AIDS Task Force, "There was a belief on the part of many of our young people that AIDS can't happen to them. This sense of invulnerability augmented by peer pressure, a desire for immediate gratification, a willingness to experiment, and a high number of sexual partners places college students at risk, whether they are heterosexual or homosexual" (Chronicle of Higher Education, February 11, 1987 p.32).

To date there have been few cases of AIDS diagnosed among college and university students. According to the HIV/ AIDS Surveillance Report of the CDC, the number of reported AIDS cases through April 1991 for individuals between the ages of 20 to 24 were 7,178. This number equates to 6,024 males or 4% of all male AIDS cases and 1,154 females or 6% of all female cases of AIDS. Although these cases are limited in number, they remain significant since they are steadily rising. Results of a study of 16,863 college students seeking medical attention showed that one in five hundred students were infected with HIV (0.2%). It must be noted that seroprevalence varied among the schools, in particular those schools where HIV was more prevalent in the surrounding community had more students who were seropositive. This study conducted by the CDC in conjunction with the American College Health Association found that students who were over the age of 24 and male, were

respectively, 6.5 and 25 times more likely to be seropositive than those who were 24 or younger and female (Gayle et al., November 29, 1990).

The incubation period for AIDS varies from six weeks to ten years; what someone does now in college may not result in the disease until long after graduation. Students frequently experiment with sex, exercise inconsistent judgement in their selection of partners, and experiment with recreational drugs (some of which are I.V. oriented). It has been suggested in the medical literature that the use of recreational drugs (non-I.V.) and or alcohol may act to suppress the immune system making the individual more vulnerable to the human immunodeficiency virus. (Health and Rehabilitative services [HRS], 1988).

College students may not confine their sexual exploits to interactions with other students; they may have relationships with other college and university personnel or with residents of the surrounding community. This type of behavior increases their risk of exposure. AIDS is no longer a disease of gay men or other high risk groups; heterosexual transmission is well documented (ACHA Report, 1989). College students are a population who are behaviorally at risk for AIDS. They need to be educated for their own protection.

According to Hirschorn (June 10, 1988 p.30, 32) the most apparent roadblock to reaching the college-age population is the widespread belief that AIDS is a gay disease. In addition, college students for the most part do not perceive themselves to be at risk for AIDS, therefore information they learn about AIDS is not incorporated into their personal lives. Also, those students who view themselves at risk may find it difficult to discuss necessary changes in sexual practice with a significant other. Open communication on sex and sexuality may require a high level of self-esteem as well as trust within the relationship. Further, such discussions may need to be taught, practiced, and reinforced in order to increase the likelihood of this type of discussion taking place.

AIDS education is considered to be one of the greatest challenges facing adult education today. In fact, a headline of the newsletter Adult and Continuing Education Today read: "Adult Education Programs are Needed in AIDS". The article went on to say that one of the crucial areas lacking in

attention were, "College students particularly those in the health-related professions" (August 15, 1988 p.1,2).

Research Questions

The aim of this study was to investigate the efforts and outcomes of AIDS educational initiatives on the college campus and to determine different types of variables that contribute to these outcomes. Emanating from this intention were sixteen major questions that were investigated.

1. Where have the college students received their information on AIDS?
2. Is any one resource referred to more than others?
3. How is a state university in an urban setting of South Florida addressing the problem of AIDS on the college campus?
4. Who are the stakeholders in AIDS education?
5. What factors enhance or impede AIDS educational efforts?
6. How does moral development, intellectual development, and religious affiliation mediate AIDS education desired outcomes?
7. What role if any does gender, life-cycle phase, and ethnicity play in college students sexual behavior and/or attitudes towards AIDS?
8. To what extent does peer pressure affect college students sexual behavior and/ or attitudes towards AIDS?
9. What role if any does sexual orientation, dating behavior, and/or comfortableness in discussing sex, play in college students sexual behavior and/ or attitudes towards AIDS?
10. What are the expressed concerns of college students in reference to AIDS?
11. To what degree if any does the college student see AIDS as a personal risk?
12. To what extent is the AIDS information verbalized by college students accurate?
13. What are students perceptions of AIDS educational efforts and outcomes? (eg. process, content, timing orientation, or style)
14. How does various AIDS educational efforts correlate with various stages in the adoption

process?

15. What are the percentages of college students in the various stages of the adoption process?

16. How do cognitive, affective, or behavioral outcomes relate to Kirkpatrick's evaluation schema? (refer to p.17).

Related Research

The American College Health Association in cooperation with the Centers for Disease Control conducted a blind HIV seroprevalence survey at 19 universities in the United States. Of 16,863 specimens in the sample, 30 (0.2 percent) were positive for antibodies to HIV (Gayle et al., 1990). The seroprevalence rate for men was greater than for women and seroprevalence increased with age. Also universities where greater seroprevalence was found were in areas where the surrounding communities incidence of AIDS was higher. Some universities had no students with HIV infection. Several had nine students per one thousand with HIV infection. Information on incidence per actual university was withheld. This infection rate was slightly higher than expected. It was purported that although students know how to prevent AIDS and other sexually transmitted diseases, drug and alcohol use, plus pressure to have sexual relations can counteract cautious behavior (Biemiller, May 24, 1989).

As of May 1, 1991, the Centers for Disease Control reported 17,026 cases of AIDS among U.S. women. This represents about 10% of all reported AIDS cases. Women are considered one of the fastest growing categories for AIDS today, followed closely by children. More than half of these women (51%) contracted AIDS through intravenous drug use. However, another 33% contracted HIV through heterosexual contacts. The remaining cases were recipients of blood products, or other tissues (9%), and/or other undetermined exposure categories (7%). According to Kerr (1991), between 1982 to 1986, the percentage of women with AIDS whose only risk factor was heterosexual contact with someone at risk increased from 12% to 26%. This trend is continuing, since, as of May 1, 1991, 33% of women with AIDS acquired the disease through heterosexual contact. Kerr (1991) asserts that support groups that focus on particular topics for discussion as well as safer sex workshops for women

taught only by female health educators are essential. She believes safer sex workshops should address the issue of male resistance to condom use and include demonstrations and instructions on the use of dental dams, where to obtain them, and how to make other latex barriers when dental dams are not readily available. Interestingly, in a study of 305 heterosexual male college students at Virginia Polytechnic Institute and University, respondents indicated they were willing to use condoms if it were suggested by their partners. Based on this finding researchers suggested that programs should be designed for female college students that focused on encouraging their male partners to use condoms possibly even supplying their partner with a prophylactic (Baffi, Schroeder, Redican, & McCluskey, 1989).

At the University of Massachusetts/Amherst, Thurman and Franklin (1990) found that students were reasonably well informed about AIDS and HIV prevention measures. Further, students were concerned that HIV was spreading within the student population. However; they were reluctant to change their sexual behavior unless the threat of infection was personalized. In a broad spectrum convenience sample of young adults in Los Angeles County, it was determined that the younger the respondent, the higher the denial of personal risk for HIV infection. The majority of respondents aged 18 to 20 reported that they had a one in a million or less chance of getting AIDS. Older respondents, age 23 to 25 indicated a higher personal risk of one chance in 1,000. In addition, males felt that they were less vulnerable to AIDS, even though they engaged in highly risky behaviors such as having intercourse with many partners without the use of condoms. Females in contrast tended to perceive other females as vulnerable. The investigators concluded that programs concentrating on risks associated with unprotected sexual behavior would be ineffective unless individuals were aided to accept their own risk status (Hansen, Hahn, & Wolkenstein, 1990).

Manning, Barenberg, and colleagues in 1988 investigated college students' knowledge and health beliefs about AIDS as well as their preference for the format and methodology of AIDS education. Questionnaires were distributed to 139 undergraduates 22 and under at Tulane University. A Health Belief Model (HBM) was used that posits the presence of five elements if health knowledge is

to be followed by recommended behavior. These elements are: (1) perceived susceptibility to AIDS; (2) perceived seriousness of contracting AIDS; (3) perceived benefit of a health action (ie. use of condoms); (4) perceived barriers to the particular health action (ie. safe sex); and perceived likelihood of adherence to the recommended health action. Each dimension of the Health Belief Model was examined in order to define where AIDS education could be most effectively targeted. Overall, students had good knowledge about the facts of AIDS which was consistent with other studies. Findings indicated an important difference between students' beliefs about practicing safer sex to prevent AIDS depending on whether their level of knowledge was high or low. Students with low knowledge levels indicated that the perceived barriers to practicing safer sex were higher than did students with high knowledge about AIDS. As far as students' preferences for the format and methodology of AIDS education, in general students preferred small-group discussions and formats such as movies or panel discussions where they could remain "anonymous". Physicians were perceived as the preferred source of AIDS information.

Interestingly, in Manning and Barenberg's discussion traits that tend to push some college students toward high risk for AIDS behaviors were described. These traits were: (1) search for self-identity; (2) defining sex roles; (3) sexual experimentation; (4) cognitive development; (5) risk-taking; and (6) egocentrism. The investigators suggest that many undergraduates are still completing the adolescent stage of development and therefore are subject to powerful forces that oppose safe sexual behaviors (Manning, Barenberg, Gallese, & Rice, May, 1989). This research coincides with Hansen, Hahn and Wolkenstein's (1990) findings that the younger the individual the stronger the tendency to deny risk for HIV infection, since this denial is a function of the developmental stage of the individual.

In 1987 Baldwin and Baldwin (May, 1988) sent a four page questionnaire to a random sample of 1,426 undergraduates at the University of California, Santa Barbara. Completed questionnaires were received from 851 students. The study results were limited to unmarried students who had engaged in vaginal intercourse in the three months prior to completing the questionnaire.

According to their findings, the average age for vaginal intercourse was 17 years and the

average number of sexual partners per year was 2. Although the number of partners would seem not to place the students at high risk for contracting HIV, a closer examination revealed that the "average" college graduate has accumulated a fair number of partners by the time of graduation. In fact a person easily accrue 15 to 20 partners prior to marriage. In addition, not all students are careful in their selection of partners. Nineteen percent of the students who engaged in intercourse in the last three months had sex with a stranger or a casual acquaintance.

They also found that the majority of students believed they had little risk of contracting AIDS. Thirty-eight percent thought it was very unlikely, 32% percent believed it unlikely, and 26% were unsure. Students were unlikely to worry about contracting AIDS from their sexual activities. Forty-three percent did not worry about it at all, while 39% worried a little bit.

Generally condom use was low, with 66% of students reporting that they never used condoms when engaging in vaginal intercourse. Only 13% of students used condoms during the previous three months. Condom use was more frequent in students from homes with higher paternal education and income. Interestingly, Hispanics were significantly more likely to use condoms than other ethnic groups. Also, people who were older at first sexual intercourse were more likely to use condoms than those who were younger. From another standpoint, people who used seatbelts regularly, used condoms more than did people who seldom used seatbelts. However, people's knowledge about AIDS and their assessment of their perceived risk of contracting AIDS did not effect condom use.

In a study conducted by Maticka-Tyndale (1991) on 1,000 French and English college students attending seven Montreal universities, findings indicated that history of prior sexual conduct and sexual scripts together with the use of oral contraceptives were the predominant influences on condom use and perception of susceptibility to HIV infection. Condoms were used only until the female partner "went on the pill". Therefore condoms were being used for contraception rather than prevention of sexually transmitted diseases (STD's). For males, the only significant influence on condom use was the number of friends thought to be using condoms. For females, the social approval of condoms along with perceived use by friends influenced frequency of condom use. When oral contraceptives are used,

the frequency of condom use declines. Further she found that students are aware of risk but firmly believe their behavior keeps them safe from HIV infection. Predominantly they are being more careful in their selection of sexual partners. The investigator asserted that students' faith in the effectiveness of their actions for risk reduction was reinforced by the infrequency of their contact with an HIV infected individual and by the AIDS education messages which have stressed that: (1) "AIDS is hard to get"., (2) "Condoms are not 100% safe", and (3) "Monogamy with an uninfected partner is the best protection".

Frequency of casual sex was influenced by several variables. Younger people engage in more casual sexual relations than older people. People with a high average number of sexual partners were more likely to have casual sex. Females were less likely to report casual sex than were males. People who regularly wore seatbelts were less likely to have casual sex. Interestingly, people with lower levels of worry about contracting AIDS through their sexual activity had lower levels of casual sex. Surprisingly, Baldwin and Baldwin found safer sexual practices were not influenced by religiosity or having had a course on human sexuality.

Baldwin and Baldwin believe the findings suggest that knowledge and worry about AIDS may motivate some cautious behavior; but assessing oneself to be at risk has little effect. As a result, educational programs that focus solely on relaying concrete knowledge about AIDS may have less impact on behavior than do programs that communicate knowledge and some cause for worry. According to Baldwin and Baldwin, people who have little or no worry about contracting the disease may not take adequate precautions, even though they are educated about AIDS and aware that they could be at risk for contracting the disease. In support of this viewpoint Calabrese and collaborators (1986) found that homosexuals living in an area with a low incidence of AIDS still commonly engage in risky sexual behavior. It follows then that heterosexuals may not be motivated to change their sexual habits until they see evidence of the disease among themselves. Baldwin and Baldwin concluded that AIDS-related education must not rely solely on programs designed to relay AIDS information only, but also stress the value of certain lifestyle habits, social responsibility, and caution in face of risky activities.

In a convenience sample of 447 college students at the University of Rhode Island, Carroll (May, 1988) found that over half of the sexually active students claimed they had altered their behavior in some way as a result of their concern with AIDS. Also 15% of the nonactive students reported their concern had prevented them from becoming sexually active. Carroll believed students may be reporting what they should be doing rather than what they are doing. Further he argues that students who are more sexually active than others may perceive greater risk, but the risk as yet undefined, is perhaps not seen as sufficiently great to cause them to behave in ways radically at odds with their permissive attitudes. Interestingly, those who claim to be more selective and to engage in sex less frequently are disproportionately female and distinct from others in dating significantly less. This particular study is the only one that indicates students may be changing their sexual behavior.

Certainly, it has become apparent that information dissemination is not enough to prevent sexually transmitted disease, as indicated by the findings of the studies reviewed. For even when students accept personal risk, other obstacles prevent them from adopting safer sex behavior. However, none of the studies have tried to determine what these obstacles are and how they interfere with adoption of safer sexual behavior.

Conceptual Framework

The conceptual framework was an outgrowth of the review of literature. It utilizes all the information previously discussed. The framework weaves this content into a literal tapestry that attempts to explain the outcomes of AIDS educational efforts on college students and the factors that affect these outcomes. Figure 1 depicts the initial conceptual framework that drove the study. Consistent with the tenets of qualitative research, the framework expanded as subsequent research advised. These improved dimensions of the conceptual framework are described later in this paper.

The individual, in this case the college student is a free agent. He or she may exercise freedom of choice in obtaining information on AIDS and its prevention. Many mediating factors can affect the process that ultimately leads to cognitive, affective, or behavioral outcomes in the individual. In the conceptual framework these mediating factors are divided into individual mediators and

institutional mediators.

Individual mediators

Individual mediators are factors that may have an impact on the individual and on the processes that lead to affective, cognitive, and behavioral outcomes. These mediators were the most frequently occurring references, gleaned from the literature on college students. They are: intellectual development, moral development, life-cycle phase, peer pressure, ethnicity, religiosity, sexuality, and gender. These individual mediators may explain why college students of a particular age, sex, or socioeconomic status differ in their response to AIDS information. It may also illuminate why some students would change their sexual behavior while others would remain promiscuous. The individual mediators could possibly explain why some efforts fail, while others are successful. For instance, if students are uncomfortable in coming to a program on AIDS because their peers believe only persons at high risk for AIDS would attend, then an alternative might be to utilize a computer program that is accessible to all students. This computer program could supply up to date information on AIDS and its prevention. A computer may be easier to face than the jeers of a peer group if seen attending a class on AIDS. These mediators are suggestions of factors that may shape the college students' behavior, and/or attitudinal changes in response to AIDS education. The particular mediator and it's degree of influence on the individual may vary from student to student.

Institutional mediators

Institutional mediators are those inherent to the university or outside providers such as: the Public Health Service; Health Crisis Network; or PWA support groups. These mediators effect the provider, the individual, and the processes that lead to outcomes within the individual. These mediators lend their effect through the goals or intentions of the institution, educational efforts provided by the various institutions, and the rationale or reasoning behind these efforts. The goals or intentions are dependent on the type of educational effort. For example, an oral presentation on AIDS may have specific measurable written objectives developed to guide the program as well as to evaluate the outcome of the program. However, a magazine article may not have a written objective, and yet it may

have an implied intention of providing information to expand the readers knowledge of AIDS. It could be possible that a provider, the college student, or administration may have different intentions as far as AIDS educational efforts are concerned. Agreement or disparity of intentions or goals may have an effect on the ultimate outcome of the educational effort. Recognizing these intentions may contribute to an understanding of these educational efforts. Educational efforts may be planned aspects of an AIDS media campaign ie. pamphlets, hotline information, radio spots, or public service announcements on television. These efforts could also include unplanned attempts at education such as; magazine articles, discussions with peers, and listening to discussions on talk shows.

From another standpoint, different efforts may cause an individual to learn but to varying degrees. Not all of the efforts are educational. Education is a systematic, deliberate goal-oriented process. In the case of an actual class on AIDS, goals and objectives are developed to guide the program and it's participants towards mastery of a predetermined quantity of information on AIDS. The goals are the intended outcomes of the educational effort. Because of the planned, systematic, goal-oriented nature of a program on AIDS it can be considered education. On the other hand, unplanned efforts such as discussion with one's peers are not deliberate, systematic, or goal-oriented; therefore it is not education. However, in both planned and unplanned efforts learning may occur.

Learning involves acquisition of information and integration of this knowledge which ultimately changes attitudes and behavior. Ideally, the adult learner, in this case college students, accept the responsibility for directing their own learning by: determining goals, selecting content, sharing, exchanging, and reformulating knowledge with others, and evaluating their success.

Some adult educators believe that learning can be evidenced only by observing a behavioral change in performance. For the college student this means a change in attitude and/or sexual behavior as it relates to AIDS. This behavioral change is the primary desired outcome of most AIDS educational efforts.

Rationale is closely linked to goals and intentions since it is the reasoning that creates the goals and intentions. As previously mentioned, colleges and universities in the state of Florida have

been mandated to provide education on AIDS to college students, faculty, and staff. The type of educational efforts may vary. The content may vary. However colleges and universities are to continue the educational instruction on AIDS started in the public schools. In fact, a committee to ensure this transition began in July of 1988, chaired by an education specialist from the Dade County school system. Area universities and colleges were requested to provide representatives from their respective schools.

It is conceivable that the university may view their goal as simply to provide information on AIDS. They may not feel it is necessary to change college students behavior and/or attitudes in reference to AIDS. The institution may believe that cognitive changes are enough.

Of course, the Public Health Service through mass media public awareness campaigns, is trying to produce cognitive, affective, and behavioral changes in the individual. One need only read the Surgeon General's report to come to this conclusion. The individual may not be in agreement with the rationale, goals, or efforts of the institution. Ultimately this disparity may affect the outcome of any AIDS educational effort.

Analysis of process

The center portion of the conceptual framework is merely a means of analyzing the process that leads to the eventual outcomes occurring in college students. The process can be investigated by utilizing aspects of evaluation, force field analysis, and adoption of innovation. These evaluative models have established empirical foundations in research but their application to HIV prevention efforts and outcomes is unknown.

Evaluation, as previously discussed, is a value laden judgement. For the institution or provider an educational effort on AIDS can be considered to have merit. In other words, merit is conferred by the institution not the participant. But to the individual the educational effort may or may not have worth. If the educational effort addresses a concern or issue for the individual it has worth. For this reason issues or concerns of the college student in reference to AIDS must be determined and addressed.

Stakeholders in AIDS education must be discerned. A potential list could include: college administration, internal university providers, external providers, and the college students. For success or failure may rest on the degree of involvement of the stakeholders. A disinterested college administration may not provide the funding or support to mount an effective AIDS educational effort.

From the standpoint of goal free evaluation, all outcomes are important. The intended outcome of an AIDS educational effort may be to increase knowledge of AIDS. But, to the college student attending a program, the most valuable part of the effort may be meeting another student with a similar viewpoint. The salient point is that all outcomes, intended and unintended have value.

Force field analysis may illuminate the process leading to outcome by identifying those factors that enhance or impede progress toward the goal of HIV prevention. Individual and/or institutional mediators may advance or block movement towards cognitive, affective, or behavioral changes in college students. If more positive mediators are present than negative mediators the potential for favorable outcomes exist. However, if more negative mediators than positive exist unfavorable outcomes, such as an overall increase in HIV infection in the student body may occur. Finally, if there is an equal number of positive and negative mediators the net effect may be no change in affective, cognitive, or behavioral stance of college students and AIDS.

Lastly, the adoption process can be used to examine the series of actions that induce outcomes of AIDS educational efforts. College students may have become aware of AIDS and HIV infection through promotional material appearing on television, radio, or in the popular press. The initial response by the students to this information may be one of interest or disinterest. Assuming some interest, students may then seek additional information which would satisfy or stifle initial interests. They may read about AIDS and HIV infection from pamphlets they obtained on campus. Or they might read an article in a popular magazine. College students may seek out information on preventing HIV infection from health care professionals on campus or from qualified counselors on a local AIDS-hotline. They might discuss with a close friend or peer their concerns about HIV infection, sexuality, and the use of condoms.

Based on all the information the college student gathered on AIDS prevention, they would next mentally evaluate the data by determining if this information is usable to them. They might again seek out individuals from their peer group who are practicing HIV prevention, question them, and relate their experiences to their own situation.

Providing the college student considers himself or herself at risk for HIV infection, they may then take the next step in the adoption process- "trial". During this stage the student would begin to practice HIV prevention. If the individual is comfortable with sexually negotiating with potential partners, utilizing condoms and protective jelly, and/or "being prepared" by carrying prophylactics, they may advance to the next stage of adoption.

Adoption or rejection is the essence of the outcome. At this point the student may adopt safer sex practices and continue to utilize them. It is conceivable that later on the student may reject safer sex practices. Or those students who at the trial stage decided not to pursue safer sex practices, after finding-out an acquaintance was infected, may progress to adopting safer sex practices.

Outcomes

The lower part of the conceptual framework deals with the actual outcomes in reference to AIDS education. Outcomes are classified as cognitive, affective, or behavioral. As previously mentioned, cognitive outcomes refer to thought processes or knowledge, in this case, about AIDS. Affective outcomes relate to attitudinal changes such as greater empathy towards persons with AIDS. Behavioral outcomes are the actual changes in behavior adopted by the college student, in this case, a move to safer sexual practices.

Acceptance or rejection can occur for each of the three types of outcomes. Initial acceptance may continue or change to rejection. Likewise, initial rejection after some significant event could change to acceptance.

As mentioned previously, the outcome might be explained by individual mediators and/or institutional mediators. The four levels of Kirkpatrick's model of evaluation may be represented in the outcomes. From the lowest level of initial reaction (R), to learning (L), changes in behavior (B), and

finally results or community impact (R'). Affective and cognitive outcomes correlate with the second level of Kirkpatrick's schema, since in order to verbalize information or to begin to alter one's viewpoint learning must take place. Behavioral outcomes are associated with the third level of the schema where changes in behavior are evidenced. From a broad perspective taking into consideration the overall cognitive, attitudinal, and behavioral changes of all students studied, the fourth level of results can be addressed. This study concentrated on the first three levels of Kirkpatrick's schema and explored the last.

Methodology

Both qualitative and quantitative methodologies are considered to be of equal importance, however the nature of AIDS education research in this study lent itself to qualitative measures. Each stage of the methodology is described in reference to the conceptual framework, since it served as an outline to the study.

Quantitative Design of the Study

As previously mentioned the conceptual framework acted as a guide for the study. It steered the research initially by providing groups of variables to be investigated. The variables changed during the course of the study particularly if they were found to be nonapplicable. For that matter, different parts of the conceptual framework changed during the study. However, it must be reiterated that the conceptual framework was developed from an extensive literature review of ten pertinent subject areas. Therefore at the very least it provided a beginning point for this investigation as well as a reference to make certain all aspects of the framework were addressed.

Population and sampling

The population for this study was undergraduate college students at Florida International University. Both the University Park Campus and the North Miami Beach Campus were utilized. This population was comprised of students of all ages (18-60+). Of the 804 students surveyed most (65%) of the students were 18 to 24 years of age and single (80%). Of these students, 68% were females and 32% males. Undergraduate representation by year was as follows: 20% freshmen, 13% sophomore, 45%

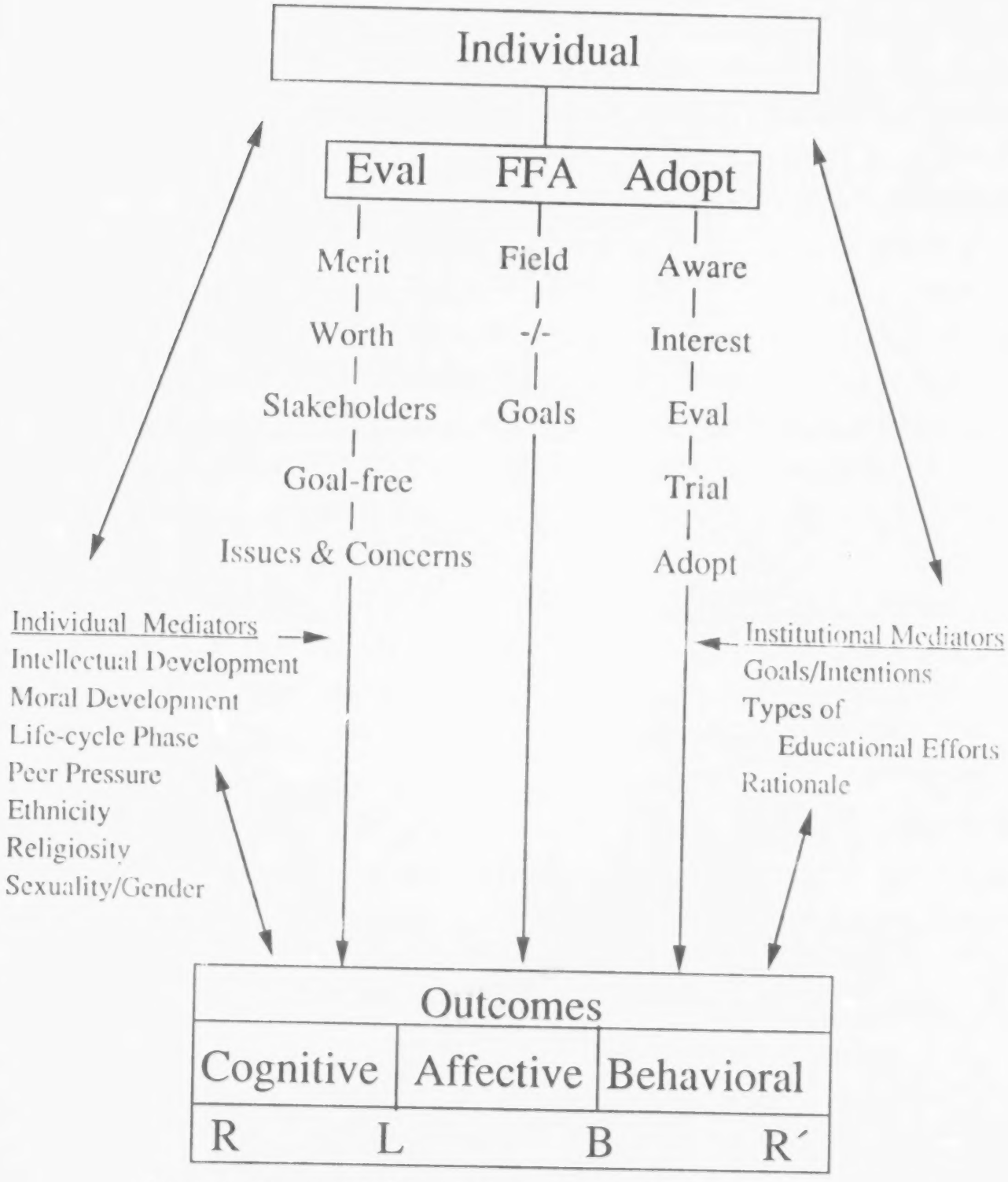


Figure 1. Conceptual framework of AIDS education efforts and outcomes.

junior, and 13% senior. Participants school of intended major were as follows: Arts & Sciences 18%; Business Administration 23%; Computer Sciences 2%; Education 35%; Engineering 3%; Health or Nursing 3%; Hospitality Management 11%; Journalism & Mass Communication 2%; and Other 4%. In terms of ethnic background the breakdown was as follows: American Indian 1%; Black African American 5%; Caucasian 55%; Oriental 35% and Other 35%. Black students from the Caribbean, Central and South America when asked said they do not consider themselves Black African Americans; therefore, they classified themselves as Other in relation to race. Surprisingly, 50% of the participants were Non-hispanic and 50% were Hispanic. The Hispanic groups represented were as follows: 33% Cuban; 6% Puerto Rican; 6% Other; 2% Columbian; 2% Nicaraguan; and 1% Mexican. The majority of respondents were Catholic 58%; 14% were Protestant; 12% Other; 7% Jewish; and 9% claimed no religious affiliation. An overwhelming 97% claimed heterosexuality as a sexual preference with 2% homosexual and 1% bisexual. Approximately half of the students surveyed worked part-time (49%) and attended school full-time. Approximately 450 students live on-campus in dormitories, however only 105 participated in this study.

Research capacity to randomize the sample was limited due to access to students. The sample was selected on the basis of large class size. Permission was sought from the professor to permit students to complete the survey during the last half hour of class-time. These surveys were completed on a volunteer basis. The researcher conferred with the Office of Institutional Research to obtain information on these large class groups. A total of 804 questionnaires were completed. This was done in two parts. The breakdown of completed questionnaires per part was: 395 for Part I and 409 for Part II. The first set of questionnaires was given to students in a Biology class for non-majors, several education classes, and a psychology course.

A total of fifty students volunteered to be interviewed in Phase 3 of the study. Due to the sensitivity of the subject matter and problems with scheduling, only twenty-two of the original fifty volunteers were interviewed. Since the sample size was smaller than anticipated and voluntary in nature it must be noted that these interviewees may not be representative. In conducting the study, it was considered

that sample bias could occur either from nonrandom selection of class groups; inability to obtain faculty permission to conduct the survey; and/or voluntary completion of questionnaire or interviews.

Phases of the study and relationship to conceptual framework

Phase 1. Survey of key administrative personnel

The survey of key administrative personnel determined their view of AIDS education at the University level, as well as their intentions or goals, rationale, and types of educational efforts either currently used or desired. This stage of the research related to the institutional mediators in the conceptual framework in addition to the outcomes. Outcomes were assessed throughout all stages.

Prior to the interviews, an interview guide was developed and piloted. The guide was piloted by conducting three interviews with members of the South Florida College and University AIDS Advisory Committee. After the researcher conducted these interviews, each interviewee was asked if there were any additional questions that should be asked or were there any that should be deleted from the guide. Only minor changes were made in the guide based on their recommendations. Not surprisingly, this provided information on what other area universities and colleges were doing in reference to AIDS education. This new information provided a comparison for what was being done at Florida International University. An interview schedule was then developed along with a preliminary set of codes for the interview data.

Persons interviewed included the following:

a) Top administrator of Student Affairs

b) Top administrator of Student Development & Chairperson of the University AIDS Committee

c) Assistant Director of Student Health Services

d) Four designated HIV counselors on campus

e) Director of Student Counseling Services

f) Medical Director of Student Health Service

g) Student Government President

After conducting the above interviews it was apparent that another individual should be included. His name was referred to throughout the course of the other interviews, as someone who had been successful in conducting AIDS education. Success was defined by those interviewed as the number of students that attended. His programs had the greatest attendance of any internal provider, and for this reason these programs were considered successful.

Phase 2. Survey of student body

A survey using large classes of undergraduate students was completed over the Fall 1989 and Spring 1990 semesters. A comprehensive questionnaire was developed based on the research of other knowledge, attitude, and behavior studies. The survey tool was piloted on two classes and revised prior to administration to the selected sample. This study was limited by: school, professor permission, and written voluntary consent of the students. To assure anonymity, the consent form was passed out and collected separately from the survey tool, only those students who chose to identify themselves for interview purposes were known. The questionnaire took approximately thirty minutes to complete. The researcher addressed each class surveyed to explain the purpose of the study and the need for student involvement. Further, the researcher distributed and collected all survey tools to assure student anonymity.

Phase 2 of the study provided information on individual mediators described within the conceptual framework. These mediators included: degree of AIDS knowledge, gender, dating behavior, ethnicity, religiosity, awareness of University AIDS educational efforts, and method preference for acquiring information on AIDS. Behavioral outcomes were reviewed in reference to condom use and the degree of behavioral change.

Phase 3. Student interviews

From 395 survey returns in Part I, a sample of 49 volunteer students were selected, only 22 students actually participated. These students were interviewed and tested for level of intellectual and moral development. The interview and testing lasted approximately two hours.

The interviews were conducted by graduate students in the College of Education. They were

chosen based on their interview experience, demonstration of interviewing skills, and written reference from a professor at Florida International University. A training program was developed so that consistent protocols were used by all interviewers. Adequacy of training was determined by demonstration of interview skills using the developed interview guide.

The interviewer scheduled the appointment with the student volunteer. The interview was conducted on campus in a private office, library conference room, or small unused classroom to ensure privacy. Student's permission was elicited prior to taping the interview. After the interview, other graduate students conducted the moral and intellectual development testing.

The researcher was present with each interviewer for at least one interview. On a weekly basis, the researcher conferred with the interviewers. These meetings allowed for peer review and helped to ensure the trustworthiness of this study.

The intellectual and moral development tools were selected based on their reliability and validity, ease of completion, and brevity. In keeping with the literature review it was also deemed important that the intellectual development tool was based on Perry's schema, and the moral development tool on Kohlberg's model. These criteria further limited the choice of instruments used in the study.

Phase 4 : Review by panel of experts

All student interview data were reviewed by a panel of five experts in AIDS education. In this study, an expert was considered to be an individual who had developed policy in relation to AIDS services or education; served on community AIDS networks; and/ or provided AIDS education or services to a specialty group (nurses, teachers, other AIDS educators) or the community.

Each panel member reviewed a maximum of five interview transcripts. These transcript copies were sent to the expert panel with instructions and a transcript review form (refer to Appendix). Each member presented the themes or trends they deduced from the interview transcripts with supporting statements. After all presentations, the panel reached consensus on themes or trends found in the interview data.

One three hour meeting was held with both experts from the University and the community. Initially

it was intended that these two expert groups would meet jointly; however, due to the experts time constraints the meetings were held separately. The researcher acted as a facilitator to each group. Recommendations made by this panel addressed the problem of AIDS and the college student. This stage referred to the individual mediators and outcomes. It allowed for discovery of mediators as well as the process involved in changing behavior and attitudes. As such, it addressed the primary question on outcomes and mediating variables.

Phase 5: Analysis of data trends

This stage took into account the entire conceptual framework. Conclusions were drawn after extensive qualitative and quantitative data analyses. SPSSX, a statistical package for social studies data analysis was used. The primary statistical measure of significance used was the Chi-square. From these analyses the final report was developed. Due to the sheer volume of the data and the lone efforts of the researcher, the analyses was protracted. Although actual data gathering was completed by March 1990, over a year was spent in analyzing the data. Recommendations to enhance AIDS education are an outgrowth of study find.

CONCLUSIONS AND RECOMMENDATIONS

Interrelationship of Findings

One of the major outgrowths of this study was the conceptual framework. Although the basic structure remained the components of the framework expanded throughout the study. In particular, the institutional and individual mediators changed throughout the process of the study. These mediators are the factors that impact AIDS education efforts and outcomes. In Phase I of the study administrative and student government personnel were interviewed. From these interviews, themes were derived that represent the institutional mediators. The same categories of mediators are repeated in the student interviews. They are as follows: people; circumstances; beliefs; and actions. A final composite of the conceptual framework can be found in Figure 2. The specific entities are somewhat different within these categories however they dovetail. For instance, student lack of personal concern relates to the

administrative group's perception of student denial. The administrative group's perception of student lack of knowledge and access to condoms relates to the administrators'awareness of condom availability as well as student's condom beliefs and condom access. Further, the student's desire for information is related to the nature of the University environment. Even the endemic traits of the student are mentioned numerous times in the administrative interviews.

Within the survey data, similar findings recur. For instance, student's lack of awareness of available materials and services on campus correlates with the student interview theme lack of awareness. Students surveyed frequency of condom use parallels the institutional mediator lack of information and access to condoms as well as the condom beliefs listed in the individual mediators. Embarrassment in discussing sexual matters relates to student survey responses in relation to discussing: contraception and AIDS, refusal of sex with an individual who has had many sexual partners, and refusal of sex without a condom. Therefore much of the information obtained during the course of this study is recurrent but from different sources thus the findings are triangulated.

Conclusions by Category and Outcomes

The researcher organized conclusions around the outcomes of AIDS educational efforts and general categories elicited from study questions. As previously discussed, the intended outcomes of AIDS educational efforts are basicly knowledge, changed attitudes, and changed sexual behavior. These outcomes are a measure of the effectiveness of any AIDS educational effort. Findings from this study represent factors that impede or assist in attainment of these outcomes.

The general categories contain conclusions on students': primary information source; knowledge of University resources; preferred method for obtaining HIV prevention information; and feelings towards information received on AIDS.

Knowledge conclusions

The data supports the fact that students knowledge of AIDS is increasing; however, students at FIU lack a complete understanding of HIV prevention measures. Most students are nearly proficient, few are proficient, or not proficient. Overall knowledge is greater than 70% but less than 80%. However,

findings indicated that students' knowledge of HIV prevention methods and to a lesser extent knowledge of risky behaviors was lacking. In particular, students were unaware that spermicide with non-oxynol 9 in conjunction with condom use decreased the risk of HIV transmission. Frighteningly, about 15% of respondents thought that oral contraceptives or use of a diaphragm protected them from HIV transmission. Students were unclear on the degree of risk for various sexual behaviors. The tendency was if they were unsure they considered the activity unsafe. Although, this type of response is safe it points out the need for explicit information on sexual behavior so that students understand the spectrum of risk and their sexual options for safety. These findings contrast with national studies where students were found to be knowledgeable about AIDS (McDermott, Hawkins, Moore & Cittadino, 1987; Manning, Barenberg, Gallese, & Rice, 1989). Findings from this study may be related to the use of a seven point Likert scale, which may be more sensitive to student knowledge and the interaction produced by what students know and what they feel. Further, for the purposes of this study mastery of AIDS information was considered to be 80%. It is quite possible that previous national studies consider knowledge of AIDS information to be adequate at 70% to 75%.

Obviously, these findings point out the need for further HIV prevention education. In particular, use of a condom along with a spermicide with non-oxynol 9 needs to be stressed to the students. In addition, clear statements must be made that oral contraceptives, diaphragms, and withdrawal do not prevent HIV transmission.

Attitude conclusions

The majority (70%) of students at FIU have positive feelings towards people with AIDS. This finding was significantly related to the overall degree of knowledge the student possessed. Those students who were more knowledgeable were in addition more positive towards a person with AIDS. More female students were found to express compassion for a person with AIDS than their male counterpart; however females were not significantly more knowledgeable about the disease. Interestingly, the data suggested that students who attend religious services yearly or never are more likely to have positive feelings towards a person with AIDS. Somewhat related to this finding, was a citation in Grieger and

Ponterotto (1988, p. 415), "Individuals who hold negative attitudes toward gay persons are more likely to be religious or affiliated with a conservative religious orientation." Further these researchers found that women were more positive in their attitudes towards PWA's. There seems to be a tendency by individuals who have negative feelings towards PWA's to clump them into high risk groups that are socially oppressed.

Student attitudes are improving towards persons with AIDS. However, attitudinal change requires repeated exposure to a variety of AIDS educational measures, including interaction with an HIV-infected individual of college-age.

Behavior conclusions

Attitude, religiosity, and particularly knowledge and personal concern are significantly related to change in sexual behavior. Students with positive attitudes towards PWA's are more likely to have changed their behavior. In contrast, students who attend religious services yearly or never are more likely to have changed their sexual behavior. The more knowledgeable the student the more likely his or her behavior had changed. Likewise, the more personal concern the student expressed about HIV infection, the more likely the student had changed his or her behavior. In fact 82% of students who had changed their sexual behavior expressed personal concern about HIV infection. This finding on personal concern and degree of behavior change is substantiated in the literature (Maticka-Tyndale, 1991; Thurman & Franklin, 1990) and to a lesser extent knowledge's interplay with behavior change. In interviews with students it was found that students who had a personal relationship with a PWA were much more likely to have changed their behavior. Again, this interaction between personal experience with a PWA and change in sexual behavior is confirmed in the literature. Unfortunately, for this interaction to happen by chance requires that more people die. This option for learning needs to be planned so that more students can benefit from knowing someone with this disease. Student club sponsorship of service projects, course fieldwork assignments to community agencies supplying services to PWA's, and PWA guest speakers are all ways of promoting this type of interchange.

Almost 60% of respondents indicated they had changed their sexual behavior to some degree;

however, condom use is inconsistent. Only 43% of single young adults use condoms most of the time or everytime. In fact, 34% of students who changed their behavior rarely or never use condoms. These students are probably representative of those who believe that screening of potential sex partners and serial monogamy are effective HIV prevention measures. Unfortunately, potential sex partners lie about past exploits and serial monogamy is additive and over time increases the risk of HIV transmission. Obviously, students must be assisted to recognize their personal risk for HIV infection through a variety of AIDS educational measures. Interestingly, in relation to condom use among single 18 to 24 year old college students, significantly more females than males used condoms everytime or most of the time while males were more likely to use condoms some of the time. However; more females than males responded that they rarely or never used condoms. It must be mentioned that 30% of the female students surveyed have not engaged in sexual intercourse, therefore the investigator feels this particular finding may relate to these students. In addition, males are more likely than females to engage in "risky behavior" at an earlier stage of a relationship. The females who participated in this study would not engage in petting below the waist, genital kissing, or sexual intercourse until they were either "going steady" or engaged whereas males indicated they would have sexual intercourse when "casually dating". In addition males indicated they were younger at first intercourse than females; however, by age sixteen, 44% of the males and 34% of the females experienced sexual intercourse.

Interestingly, students were more likely to use condoms with a person they "love" or "like" than with a casual acquaintance. In addition, 70% of students with one or two partners in the past year, use a condom everytime. However, only 50% of students with four or more sexual partners use a condom everytime. Obviously half of these students are placing themselves and each sexual partner at risk for HIV infection. Since AIDS and HIV infection are at higher levels in the community, students at FIU are more likely to come in contact with an infected individual.

These findings represent a significant change in student sexual behavior since the majority of students are using condoms to some extent. It may represent a trial type of behavior in that students who become more comfortable in condom use may be more likely to consistently repeat this behavior.

Unfortunately students are more likely to use condoms with a person they like rather than a casual acquaintance or a person they love. Also students who have more than two sexual partners a year are less likely to use condoms than those students with only one or two partners. Further students who are nearly or not proficient in knowledge of AIDS are more likely to use condoms everytime than those students who are proficient. However, students who are proficient in knowledge are more likely to use condoms most of the time than those students who are not or nearly proficient in AIDS knowledge. These findings point to a need for more HIV prevention education so that students can identify their personal risk for AIDS and measures to decrease this risk. Further studies indicate that men are willing to use condoms if it were suggested by their partners (Baffi, Schroeder, Redican, & McCluskey, 1989). Although discomfort in discussing sexual issues was not directly mentioned by students, when discussing their sexual behavior they frequently giggled or blushed. The panel of experts indicated that lack of sexual negotiation skills plays a key role in students' risky sexual behavior. Many are too embarrassed to ask a sexual partner to use a condom so they have sexual relations unprotected. Students must be taught through role-play or reading of scripts to respond to a variety of sexual negotiation scenarios. In this way, they are prepared to respond without embarrassment when the situation arises.

General categories

Primary source of AIDS information

This study found that students are more likely to obtain information from an impersonal source such as television, magazines, newspapers, and brochures. Interestingly, students who were proficient in AIDS knowledge primarily received their information from newspapers and magazines, and to a lesser extent from television. On interview students expressed that embarrassment at discussing sexual issues was a barrier to participation in a class or group discussion on AIDS. This points out the need for a varied approach to AIDS education, that presents HIV prevention messages without compromising the student.

Preferred method for obtaining AIDS information

The majority of students want to learn more about HIV prevention. Students indicated that a peer hotline was the preferred method of obtaining information on HIV prevention, along with assistance in personal relationships. Next they felt small group meetings on campus offered at various times and advertised appropriately would yield a good response. Then they said that mandatory lectures or programs offered within a core class would be worthwhile. In student interviews this captive audience technique was mentioned frequently, as a means of insuring that all students received information on HIV prevention. Also the internal panel of experts felt the captive audience method would reach the most students. In general, students indicated a varied approach is needed ranging from mandatory classes to peer counselors, peer HIV prevention hotlines, group discussions offered periodically on campus, games, plays, and computer programs accessible via a personal computer. Students emphasized that HIV prevention programming must be enjoyable.

Knowledge of University resources

On interview, students repeatedly indicated they were unaware of AIDS educational programming. Some said they had seen a videotape during orientation. Others mentioned they had picked up HIV prevention pamphlets outside the campus bookstore. Still others said that their only contact with information on AIDS was through this study. The investigator conducted classes on HIV prevention and/or supplied the students with HIV prevention pamphlets and copies of the University's AIDS Policy during the course of the study. Interestingly, 44% of survey respondents indicated they had not attended a program on AIDS because of lack of awareness of availability.

Only 44% of students surveyed knew that condoms were available free of charge from the student health center. Similarly, only 33% of students were aware that the University offered free counseling services. This lack of student awareness signals a need for improved marketing strategies. Poor marketing was considered a barrier to AIDS education by the students and the administrative leadership interviewed.

Feelings towards information received on AIDS

Forty- seven percent of students surveyed said they would like more information on AIDS and HIV prevention. This percentage may actually be higher since many students hand wrote this response on the survey tool and during recoding of data it may not have been picked-up by the computer scan. Obviously, students want to learn more about AIDS and it is the duty of the University community to provide the funding, resources, and support required to do so effectively.

Conclusions based on historical perspective

From a historical perspective, FIU was initially at the forefront of AIDS policy development and education, however; due to changes in the administration and the University AIDS Committee leadership early progress slowed. Further, no one individual was charged and funded to develop, coordinate, and implement AIDS education efforts on the University campus. Actual funding of the University AIDS Committee efforts ranged from $3,000 to $6,000 dollars per year, a negligible amount when one considers the overall University budget. As the rank of the UAC chairpersonship declined the access to the executive level weakened. Communication was impaired between the executive and provider levels as well as the provider and recipient levels. Student representation on the UAC, although desired was not present consistently, thus breaking the link between the provider and recipient levels. Also, evaluations of AIDS educational efforts by the student body were only occasionally done and not retained. Again, this lack of feedback impaired communication between the provider and recipient level.

Recommendations

The recommendations that follow are presented in the context of implications for theory, practice, and further research. These recommendations are not only a response to research findings. They also represent years of thought and observation of AIDS educational programming.

Implications for theory

Theory is created via an inductive reasoning process.

The conceptual framework began as a model to organize information gleaned from eleven separate

subject areas. Over the course of this study, the conceptual framework was revised. The categories of individual and institutional mediators were expanded to accommodate specific factors gleaned from the administrative leadership, and student interviews as well as the survey responses. This conceptual framework contributes to an understanding of the dimensions of factors that impact college students reactions and decision-making for involvement in AIDS education efforts and changes in their attitudes and behavior. Further qualitative study on how students progress towards knowledge of AIDS, attitudinal change, and change in sexual behavior is required to enhance the conceptual framework. Additionally, factors that impact student progress towards these outcomes need to be determined so that a theory of factor interaction and impact on the individual's progress towards AIDS educational outcomes can be developed. This theory could assist readily in the design of interventions to overcome barriers to student progress while enhancing those factors that contribute to movement towards and attainment of these AIDS educational outcomes.

Implications for practice

Specific interventions for improving the response to students' HIV prevention needs are given. Over the years these interventions may save many lives. In particular, students from the allied health professions need to be targeted as many times they are the educators and role models for other students.

- Garnering the support of the administrative leadership via presentation of an action plan for further addressing: HIV prevention, sex under the influence of alcohol, and drugs on the University campus. This action plan should specifically ask for their support via: (1) allocation of resources and funding, (2) directing the faculty to assist in integration of AIDS subject matter into core courses, and (3) requiring interaction between and among allied health programs to address this problem.
- Development of a Peer Educator program at the School of Allied Health.
- Encourage allied health students to become peer educators. The peer education role could be used as a special project to teach client health education to the allied health students.

- Increase and improve marketing strategies by:

  (1) Challenging students to develop a campaign for HIV prevention geared to the student body.

  (2) Placing HIV prevention messages monthly on the lighted bulletin boards throughout the campus.

  (3) Advertise programs on Improving Sexual Negotiation Skills, or Love, Relationships, and Sex in the campus newspaper.

  (4) Have peer educators make announcements for group discussion sessions or other programming during their classes.

- Gain permission of allied health instructors to conduct an interactive program on HIV prevention during class time. The time should ideally be 45 minutes to 1 hour.
- Develop an interactive program on HIV prevention geared towards dispelling myths, discussing sexuality, steps in condom use, and sexual negotiation. Every semester, send faculty members notice of the program availability and forms for requesting the program.
- Develop a "Dear Peer" column in the campus newspaper for students to have questions answered on relationships, sex, and sexually transmitted diseases.
- Every semester man tables in the student union for HIV prevention information, wellness information, and condom distribution.
- Encourage allied health students to devise different methods for providing HIV prevention messages for instance; they could devise short plays on: sexual negotiation, how to put on a condom, a parody of sexual orientation ie reverse all the statements used on homosexuals and apply them to heterosexuals. A group of allied health students could conduct street theatre using these creative plays on campus.
- Encourage allied health students, as part of a course project to provide service to organizations involved with AIDS patients such as: Miami Children's Hospital, Health Crisis Network, Cure AIDS Now etc.
- Develop more games for promoting wellness and HIV prevention ie Wheel of Risk, Condom

Olympics, and Feud of the sexes.

- Develop a short evaluation tool that can be completed quickly by students attending AIDS education programming and maintain a computer file of findings.
- Involve allied health students in promotional events such as: Health Fairs, Valentine's Day condomgrams, and Safer Sex Booths during Health Expos.

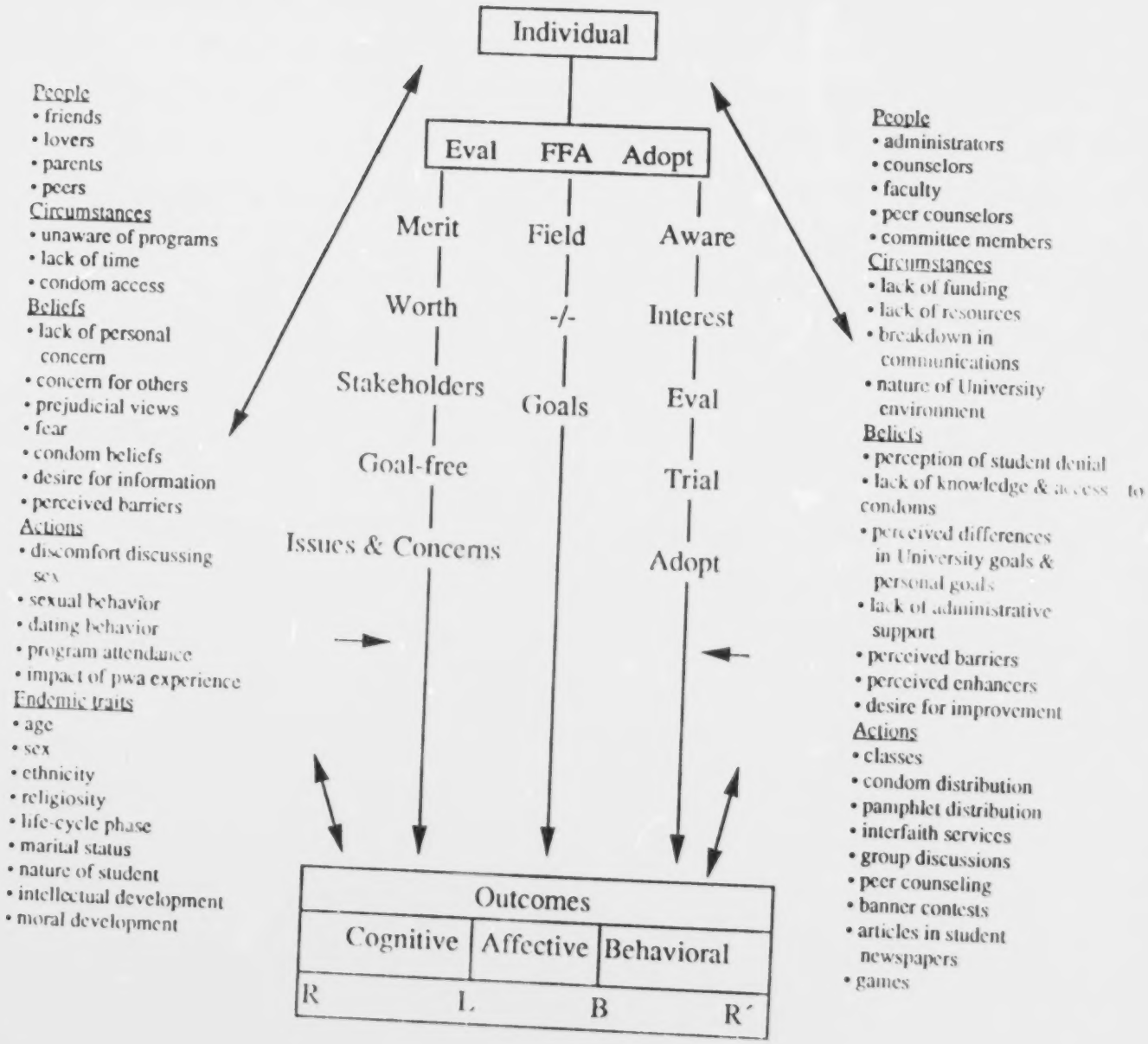
Implications for future research

Further study is required to empirically determine the factors that impact students' progress towards AIDS education outcomes. In particular, findings from this study were unable to prove that intellectual or moral development were individual mediators affecting students knowledge, attitudes, or behavior in relation to AIDS. Ideally, moral dilemmas could be created and tested that deal with sexual responsibility so that the test shares in the same thought process students go through when trying to make a sexual behavior decision.

Further student interview research needs to be done to establish how students progress towards attitude and behavior change. Interviewers should be trained but above all should be comfortable in discussing sexual issues with students. The interview schedule should only contain topics to be discussed rather than questions so that the interview remains unstructured and capable of eliciting a myriad of information. Finally, the survey tool used in this study should be utilized several more times at different universities to establish its' reliability and validity. A list of potential hypotheses to be tested follows:

1. Faculty support for HIV prevention efforts on the campus has a positive effect on students knowledge, attitudes, and sexual behavior.
2. Allied health students do not differ from university students in their knowledge, attitudes, or sexual behavior in relation to HIV/AIDS.
3. Students with higher levels of moral development are more likely to have positive attitudes towards PWAs than those students with lower levels of moral development.
4. Fear of HIV disease prevents students from practicing safer sexual behavior.

Appendix J
Final Composite of Conceptual Framework



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5. Students with sexual negotiation skills are more likely to practice safer sex than those who lack these skills.

Summary

General categories of conclusion were based on study questions and findings. These categories were: primary source of AIDS information,; preferred method for obtaining AIDS information; knowledge of University resources; feeling towards information received on AIDS; and conclusions based on a historical review of AIDS policy and development at FIU. Recommendations put forth included implications for theory building, practice, and future research. Finally, hypotheses for further research were suggested.

In summary, the conclusions of this study were categorized and presented according to AIDS education outcomes of knowledge, attitudes, and behavior. They include the following:

- Students knowledge of AIDS is increasing, however; they lack a complete understanding of HIV prevention measures.
- The majority of students express positive feelings towards people with AIDS.
- Attitude, religiosity, and knowledge are statistically significant in reference to sexual behavior change.
- Students are more likely to use condoms with someone they love or like rather than a casual acquaintance.
- Overall students desire more information on AIDS.

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MINORITY STUDENT RECRUITMENT AND RETENTION STRATEGIES USED BY ENTRY-LEVEL PHYSICAL THERAPY EDUCATION PROGRAMS

by

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Minority Student Recruitment and Retention Strategies Used By Entry-Level Physical Therapy Education Programs

Awilda R. Haskins[1]

Abstract: There is a low proportion of minorities in physical therapy, and despite efforts by the American Physical Therapy Association to increase minority participation, black membership in the association has in fact declined recently. Increasing minority representation in the profession requires improving minority student recruitment and retention efforts by educational programs. There is a need to investigate what efforts physical therapy educational programs have been using to attract and graduate minority students, and which of these efforts have been the most effective in recruiting, enrolling and graduating minority students.

Background

Minorities are underrepresented in physical therapy as they are in the health professions, education and the total workforce. Unemployment rates for minorities are disproportionately high when compared to those for Whites (Commission on Minority Participation in Education and American Life, 1988). In both private industry and in the public sector, minorities are either underrepresented or clustered in the lower paid positions of operatives, service 12 workers, office and clerical staff, and craft workers (United States. Equal Employment Opportunity Commission, 1986; United States. Equal Opportunity Commission. Public Sector Programs, 1983). Median incomes for Whites far exceed the median incomes for minorities (United States. Health Resources and Services Administration, 1985).

In education, the proportion of minorities graduating from high school, going to college and graduating from college is less than the proportion of Whites (Astin, 1982; Barse, 1989; Jaschik, 1987, September 2; Upton & Pruitt, 1986; Wharton, 1988). In higher education, minorities tend to be

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concentrated in those institutions with the fewest resources, particularly the community colleges (Astin, 1982), and in those fields with the lowest pay, such as education, humanities and the social sciences (Findings and Recommendations from the Report of the Task Force on the Engineering Student Pipeline, 1988; Thomas, 1985; United States. Task Force on Women, Minorities, and the Handicapped in Science and Technology, 1988). Minority administrators, faculty and support personnel are also underrepresented in higher education (Maguire, 1988; Moore, 1987/1988; United States. Equal Employment Opportunity Commission, 1979; United States. Equal 1-Employment Opportunity Commission, 1983).

In the health care fields, minorities are concentrated in the lower paid service positions (United States. Health Resources and Services Administration. Division of Health Professions Analysis, 1984). Minorities are underrepresented in the health professions and in medicine (Committee to Study the Role of Allied Health Personnel, Institute of Medicine, 1989; Lecca & Watts, 1989). Evidence exists that minority practitioners provide health care services to underserved areas more than do non-minority practitioners (Garcia & Fowkes, 1987; Keith, Bell, Swanson & Williams, 1985; United States. Health Resources and Services Administration. Bureau of Health Professions. Office of Data Management, 1985). Thus the shortage of minority health care professionals results in minority populations, with disproportionately high rates of disease, having less access to health care services.

In physical therapy there is a low proportion of minority practitioners. Black representation in the American Physical Therapy Association (APTA) has in fact declined from 1.4% to .7% (American Physical Therapy Association, 1987). According to Marc Goldstein, Associate Director of the Department of Education of the APTA, in 1988, only 5.6% of all physical therapy graduates were minorities. The 1981 House of Delegates of the APTA adopted the Plan to Foster Minority Representation and Participation in Physical Therapy which articulates the need to pursue aggressive recruitment of both minority faculty and students in the field. However, federal funding for minority student programs is declining, and a disproportionately high share of what is funded has been spent on medical education (Committee to Study the Role of Allied Health Personnel, 1989).

Poverty, inadequate education and racism have been cited as critical factors responsible for the underrepresentation of minorities throughout our society. The number of minorities living below the poverty line in one parent households has been increasing (College Entrance Examination Board [CEEB], 1985). Federal funding of grants for education has been decreasing, and families from lower income levels are hesitant or unable to assume large debts to educate their children (Kolbert, 1985, August 18). Thus, the absence of financial aid prevents minorities from entering college, causes them to postpone a higher education or causes them to drop out of school (Upton & Pruitt, 1986). Inadequate preparation for a college education has been cited as a factor resulting in the underrepresentation of minorities in higher education (Tijerina & Biemer, 1987/1988; National Commission on Excellence in Education, 1983). Minorities are overrepresented in vocational and special education programs, and minority students are less likely than non-minority students to be in college preparatory programs (Burgoon, Burgoon, Buller, Coker, & Coker, 1987; CEEB, 1985; Orfield & Paul, 1987/1988). Even college bound minority students are likely to have fewer years of physical sciences, social sciences and math than non-minority students, and the math minority students do receive is more likely to be a general or business math as opposed to the trigonometry or calculus taught to non-minority students (CEEB, 1985). Minority students are more likely than non-minority students to be in crowded classes with less qualified teachers (Orfield & Paul, 1987/1988) and have less access to computers and teachers trained in the use of computers (CEEB, 1985).

Racism has perpetuated the myth that minorities are genetically inferior intellectually (Howard & Hammond, 1985). Overt or covert racism in counseling has been responsible for the tracking of minority students out of college preparatory programs (Samuda, Kong, Cummins, Pascual-Leone, & Lewis, 1989; Stone, 1975). Negative stereotyping, anxiety or lack of knowledge about minority students has resulted in the inadequate provision of counseling services to minority students (Margolis & Rungta, 1986). Teacher bias results in the referral of more minorities than non-minorities to programs for the educable mentally retarded (Lanier & Wittmer, 1977). Teachers view their negative perceptions of minority students as definitions of reality, and use those perceptions to limit the potential of minority

students (Washington, 1982).

Subtle discrimination and overt racism persist in higher education also. Culturally biased admissions criteria have an adverse impact on minority students (Barse, 1989; Chapman, 1989; Manning, 1989; Scott, 1989; Ward & Cross, 1989). Inadequate resources are allocated to the retention of minorities in higher education (DeLoughery, 1988, June 15). Institutional racism results in the preferential hiring of non-minorities in the faculty (McMillen, 1986, September 10; Moore, 1987/1988; Wilson, 1989). Minorities on the nation's campuses endure vandalism, beatings, harrassment and physical and verbal abuse (Beckham, 1-1987/1988; Smith, 1981).

Since the 1930s, the nation's courts have said that states have no right to deny students access to higher education on the basis of race alone (Missouri ex rel. Gaines Canada, 305 U.S. 337 [1938]; Sipuel v. Board of Regents of the University of Oklahoma, 332 U.S. 631[1948]). Attempts by states to provide minorities with a "separate but equal" system of education have been judged racist and the courts have ruled that states must eliminate such dual systems (Brown v. Board of Education, 347 U.S. 483 [1954]; Florida ex rel. Hawkins v Board of Control, 350 U.S. 413 [1956]). Passage of Title VI of the Civil Rights Act of 1964, and the subsequent Adams case which forced the government to enforce Title VI, have resulted in the establishment of guidelines for affirmative action by the U.S. Department of Education.

Institutions of higher education have attempted to remedy the underrepresentation of minorities by implementing a variety of affirmative action strategies. Those strategies have included traditional methods of recruitment, mediation approaches and comprehensive interventions (Richardson & Bender, 1987). Traditional approaches rely on aggressive recruitment strategies to compete for a limited number 1- of qualified minority applicants. The mediation approach, while also competing for a limited number of qualified applicants, seeks to provide opportunity to marginally qualified students and includes summer bridge programs and academic support services. The intervention approach seeks to expand the pool of qualified minority applicants by working directly with junior and senior high schools and community colleges to provide early advisement, college awareness, role models and instructional

enhancement. The literature indicates that while traditional approaches alone are generally ineffective, mediation and intervention approaches have been found to be successful in increasing the representation of minorities in higher education (Barse, 1989; Pruitt & Issac, 1985; Scott. 1989; Ward & Cross, 1989).Recruitment of minorities alone, however, does not ensure the graduation of minorities (Sleeth & Mishell, 1977). Comprehensive retention efforts are needed to increase the representation of minorities in higher education and in the professions (Christoffel, 1986; Gavin, 1989; Oliver & Brown, 1988; Richardson & Bender, 1987). The retention of minorities requires institutional commitment (Barse, 1989; Lewin, 1987; Ward & Cross, 1989), improved attitudes of faculty and staff (Earley, 1987; Leach & Roberts, 1988; Lunneborg & Lunneborg, 1986), a receptive campus climate (Fleming, 1984, O'Brien, 1989; Smith, 1981; Ward & Cross, 1989) and the increased presence of minority faculty and staff (Cordes, 1988, November 16; Cox & Jobe, 1987/1988; Earley, 1987; Pruitt & Issac, 1985; Ward & Cross, 1989). Services essential for the retention of minority students include financial aid (Adams, 1988; Astin, Astin, Bisconti, & Frankel, 1972), orientation and acculturation activities (Baker & Baker, 1989; Chernin & Goldsmith, 1986), counseling (Leach & Roberts, 1988; Oliver & Brown, 1988) and academic support services (Astin, 1982; Boyd, 1982; Frierson, 1989; Lewin, 1987).

While the literature is replete with examples of regional, statewide, institutional and programmatic models of recruitment and retention programs, a frequent criticism of these programs is the lack of evaluation or the presence of inadequate evaluation (Edmonds & McCurdy, 1989; Rendon & Nora, 1987/1988; Richardson & Bender, 1987). While anecdotal or subjective evidence supports the usefulness of recruitment and retention programs, there has been little systemmatic study of the effects of various recruitment and retention strategies (Astin, 1982; 1 -Christoffel, 1986).

Purpose

The purpose of this study was to determine which of the many interventions advocated in the literature have been used by physical therapy education programs and which have been the most effective in recruiting, enrolling and graduating minority students. Programs that make a special effort to recruit, admit or retain minority students were compared with programs which do not make special

efforts. For programs that do make special efforts, recruitment and retention strategies utilized were compared to determine which activities are the most effective in increasing the proportion of minorities in the applicant pool, enrolled in the first year of professional study, and graduated from the program. The null hypotheses were:

1. There is no difference between programs which make no effort to recruit, admit or retain minority students and those programs that do make an effort to recruit, admit or retain minority students as measured by the equity scores.
2. For those programs which do make an effort to recruit, admit or retain minority students, there is no difference in the effectiveness of various recruitment strategies in recruiting or enrolling 1- minority students as measured by the equity application scores and the equity enrollment scores.
3. For those programs which do make an effort to recruit, admit or retain minority students, there is no difference in the effectiveness of various retention strategies in graduating minority students as measured by the equity graduation scores.
4. There is no relationship between programmatic or institutional characteristics and the level of success in recruiting, enrolling and graduating minority students as measured by the equity scores.

Method

Subjects

A list of 52 programs which were identified as maintaining data on the number of minority applicants, minority students enrolled and minority students graduated from the program was obtained from APTA. The University of Puerto Rico (UPR) and Florida International University (FIU) were eliminated from the study. UPR reported that all of its students were Hispanic, reflective of the

population of the Island. Thus, the inclusion of UPR would have skewed the results of the study. FIU was eliminated, as the researcher has served as that program's minority student coordinator for several years. The researcher then conducted a preliminary survey to determine which programs made special efforts to recruit, admit or retain minority students. Programs were included in either the "no effort group" (made no special efforts) or the "effort group" (made special efforts) according to the information obtained from this preliminary survey. Twelve programs made no special efforts, while 35 programs were deemed to be making special efforts at the program level to recruit, admit or retain minority students.

Procedure

A questionnaire was sent to all 12 programs in the no effort group. Of the 12 questionnaires sent, 8 were returned by the given deadline. Fifteen programs from the effort group were selected at random to participate in a telephone survey to be administered by the researcher. Only 14 programs from the effort group were surveyed, due to lack of cooperation from 1 of the programs from the effort group selected at random.

Both the effort and no effort groups were asked to identify: the degree offered; the length of the program; the type of institution (public or private); 1 - the administrative structure of the program (where housed, e.g. school of medicine or allied health); the average annual cost of tuition; the number of full-time

faculty; the number of minority faculty; and, whether or not external funding was received and, if so, the amount of external funding and the level at which external funding was granted (e.g. program, college or institution). Both groups were also asked to identify: the total number of applicants and minority applicants for the year in which the class which graduated in 1990 was admitted; the total number of students and minority students enrolled in the first year of professional study for the class which graduated in 1990; and, the total number of graduates and minority students graduated in 1990. Equity scores for application, enrollment and graduation were calculated using a modified version of

Richardson and Skinner's formulas (1990). Equity scores for application (MESA) and enrollment (MESE) were calculated using the proportion of minority 20 to 24 year olds in the state's population to weight the scores. Equity scores for graduation (MESG) were weighted with the proportion of minorities in the first year of professional study.

Programs in the effort group were surveyed on 37 recruitment activities and 31 retention activities identified in the literature as being successful strategies for minority student recruitment and retention in higher education. Programs in the effort group were also asked to identify any additional methods utilized which were not included in the survey.

A pilot study was conducted prior to conducting the telephone surveys. The pilot study established the validity and reliability of the survey instrument. Minor changes were made to the survey instrument to clarify the scope and meaning of certain terminology.

Data was processed using the Statistical Package for the Social Sciences (SPSS). Nonparametric tests of significance were used because of the sample size, the presence of extreme outliers, and indications that the distribution of the equity scores in the population may not have an underlying normal distribution. The p- value was set at .05.

Twenty one of the 37 recruitment activities surveyed were implemented by more than 50% of the programs in the effort group. The top 10 recruitment strategies used by programs in the effort group are as follow:

1. use brochures, fliers, pamphlets, etc. to advertise the program
2. use faculty in recruitment efforts
3. use students in recruitment efforts
4. use non-traditional admissions criteria
5. use alumni in recruitment efforts
6. use special or flexible admissions policies
7. use local practitioners in recruitment efforts
8. participate in career fairs

9. sponsor open houses or field trips to the institution

10. participate in health fairs

Twenty of the 31 retention strategies surveyed were implemented by more than 50% of the programs in the effort group. The top 10 retention strategies implemented are as follows:

1. provide academic counseling
2. discuss cultural differences in the curriculum
3. monitor student grade point averages
4. encourage minority student participation in cultural events
5. provide orientation activities
6. provide tutoring
7. provide personal counseling
8. provide career counseling
9. sponsor minority guest speakers
10. teach to different cognitive styles

The 16 recruitment strategies implemented by less than 50% of the programs in the effort group are as follow:

1. participate in athletic screenings
2. provide preprofessional enrichment courses
3. use local media provide assistance in completing admissions forms
5. talk to parent groups provide assistance in completing financial aid forms
7. receive or share information on prospective minority students with other physical therapy programs
8. talk to church groups
9. set quantitative minority student enrollment goals

10. participate in scoliosis screenings sponsor family days

12. teach in elementary schools

13. teach in middle schools

14. teach in high schools

15. teach in community colleges

16. participate in Health Occupations Students of America (HOSA) activities

The 11 retention strategies implemented by less than 50% of the programs in the effort group are as follow:

1. test basic skills

2. evaluate student assessments of support services

3. provide sensitivity training to non-minority faculty

4. provide child care services

5. provide teaching or research assistantships for minority students

6. examine racial bias in the curriculum

7. follow up on dropouts

8. provide acculturation activities

9. provide computer assisted instruction

10. involve students' families

11. provide student leadership opportunities through HOSA activities

The first null hypothesis was that there is no difference between programs which make no effort to recruit, admit or retain minority students and those programs which do make an effort to recruit, admit or retain minority students as measured by the equity scores. This hypothesis was not rejected. It is possible that the sample size was too small, that the method used to include programs in either the effort group or the no effort group was flawed by the complexity of defining what constitutes special efforts, or that the program's location and the proportion of minorities in the same geographic area may be a factor in the ability of programs to recruit or admit minorities. It is also possible that programs with

few minority applicants or students may be making efforts to recruit or retain minorities which have yet to come to fruition, or that success in minority student recruitment and retention is due to something not measured by the researcher. Finally, it is possible that the inclusion of Asians in the computation of the equity scores and the process of weighting the MESG with the proportion of minorities in the first year of professional study, may be artificially inflating the equity scores. Therefore, the equity scores (particularly the MESG) may not truly reflect the success of the programs in minority student recruitment and retention.

The second null hypothesis was that for those programs which do make an effort to recruit, admit or retain minority students, there is no difference in the effectiveness of various recruitment strategies in recruiting or enrolling minority students as measured by the equity application scores and the equity enrollment scores. There was a statistically significant direct relationship between the mean equity score for applications (MESA) and the recruitment activities of talking to parent groups and keeping in touch with potential minority applicants. Also, programs with MESAs ranked in the top half of the effort group, more often than those programs with the lower MESAs, reported using the following recruitment strategies:

1. giving talks to parent groups
2. keeping in touch with potential minority applicants
3. using special or flexible admissions policies
4. providing preprofessional enrichment courses
5. setting quantitative goals for minority student enrollment
6. disseminating financial aid information to minority students

There was a statistically significant direct relationship between the mean equity score for enrollment (MESE) and the recruitment activity of assisting students in completing admissions applications. Also, programs with the higher MESEs, more often than programs with the lower MESEs, reported assisting applicants in completing admissions applications. Less than 50% of the programs in the effort group implemented four of the seven recruitment 1 - strategies which appeared to be effective

in increasing either the MESA or the MESE. The third null hypothesis was that for those programs which do make an effort to recruit, admit or retain minority students, there is no difference in the effectiveness of various retention strategies in graduating minority students as measured by the equity graduation scores. No retention strategies were positively associated with the MESG and this hypothesis was not rejected. However, the mean MESG for those programs in the effort group was 72.4, and the cutoff score for comparing the top and lower halves of the effort group was a MESG of 96. Thus, most of the programs in the effort group (regardless of whether they were in the lower half or the upper half) were successful in retaining most of those students which they enrolled in the first year of professional study.

The fourth null hypothesis was that there is no difference between programmatic and institutional characteristics and the level of success in recruiting, enrolling and graduating minority students as measured by the equity scores. There was a positive relationship between the MESA and the amount of external funding received at the school or institutional levels, and between both the MESA and the MESE and the presence of external funding at the school or institutional levels. There was also a positive relationship between the MESE and the presence of external funding at the program level. These relationships could be due to external funding facilitating the ability of programs to recruit or admit minority students, or it could reflect the fact that faculty commited to cultural diversity are more likely to pursue external funding opportunities.

The MESG was related to administrative structure. Programs in medical schools had higher MESGs than did programs in schools of allied health. Medical schools also had more recruitment and retention activities at the program level than did schools of allied health, perhaps explaining the higher MESGs.

Other findings were not related to the hypotheses but are of interest. More programs in the effort group than in the no effort group participated in an effort involving other units (termed "a larger effort") which received external funding for the purpose of recruiting or retaining minority students. However, few of the programs knew the amount of funding of the larger effort.

The MESA is directly related to the MESE, perhaps indicating that a large pool of minority applicants is a prerequisite for the enrollment of minority students, or that minority students tend to apply to programs which already have minority students enrolled. The MESG was inversely related to the total percentage of retention strategies utilized, perhaps indicating that those programs with the most difficulty graduating minorities are trying the hardest to overcome these problems. The length of the program was positively associated with the presence of external funding at the program level, possibly because longer programs perceive themselves as being less attractive to minorities and thus are more vigorous in pursuing external funding to assist in recruiting minority students.

Discussion

There are indications that some of the recruitment strategies are related to success in recruiting minorities to the applicant pool, or to success in enrolling minority students in the first year of professional study. Successful strategies include assisting students to complete admissions applications; giving talks to parent groups; keeping in touch with potential minority students; using special or flexible

admissions policies; providing preprofessional enrichment courses; setting quantitative goals for minority student enrollment; and, disseminating financial aid information to minority students.

There is also some evidence to suggest that external funding is related to success in recruiting minorities to the applicant pool and in enrolling minorities in physical therapy education programs. Also, programs in medical schools seem to be more successful at graduating minorities than are programs in schools of allied health, possibly due to having more retention activities at the program level.

There is not enough evidence to indicate that there is any difference between programs which do make an effort to recruit, admit or retain minority students and programs which do not in the number of minority students applying to the program, the number of minority students enrolling in the first year of ^]professional study or the number of minority students graduating from the program.

Recommendations

This study has provided physical therapy education programs with a method of analyzing success in minority student recruitment and retention. The equity score formulas, as adapted from Richardson and Skinner's model (1990), provide a valuable tool for assessing the program's success in providing opportunity to minority students. Physical therapy programs can utlilize these formulas to evaluate their success in recruiting minorities to the applicant pool, enrolling minorities in the first year of professional study, and graduating minorities. Programs may want to eliminate Asian American applicants or students from inclusion in the calculations of the equity scores, and should note the effect of losing non-minority students on the MESG.

Physical therapy programs need to be more vigorous in pursuing minority faculty. While this study could not examine the impact of minority faculty, the fact that there were only two minority faculty in the entire study indicates the need for more minorities on the faculty of physical therapy programs.

The lack of knowledge of the amount of external funding received by programs participating in a larger effort is perhaps indicative of a certain weakness in the commitment of physical therapy programs to minority efforts, as is the small number of programs which set quantitative goals for the enrollment of minority students. Physical therapy programs need to be more involved in larger efforts which are externally funded, set quantitative goals for minority student enrollment and ensure an active participation by their programs in institutional efforts. Physical therapy educators should review the recruitment and retention activities identified in this study as being implemented by less than 50% of the programs in the effort group. Few programs were involved in activities which put then into close proximity with minorities such as talking to church groups or parent groups, sponsoring family days for recruitment or participating in Health Occupations Students of America club activities. Physical therapy educators who truly want to reach out to minorities must vigorously pursue these options.

Few programs in the effort group participate in scoliosis or athletic screenings, or teach at the elementary, middle, high school or community college levels. These activities would put educators in a

position to expose the profession to a wide variety of students, provide minority students with role models, and increase college awareness among minorities.

Physical therapy programs need to develop a network allowing them to share information on minority applicants. Since most physical therapy programs are limited access, capped programs, this would ensure that more minorities get considered for admission at a wider range of programs.

Few programs provide preprofessional enrichment programs and assistance in completing financial aid and admissions forms. Inadequate preparatory education is a factor which will continue to exclude minorities from physical therapy education until educators become more vigorous in their attempts to compensate for it.

This study could be improved by enlarging the study sample, possibly to include all programs accredited by the APTA. It might even be advantageous to have APTA's Department of Accreditation require all accredited programs to implement uniform procedures for monitoring the number of minorities applying to the program, enrolled in the program and graduated from the program. Currently many physical therapy programs do not have a data base available on the number of minorities applying to the program, nor do they all consider Asian Americans to be a minority group.

Future research in this area should concentrate on a larger time span, reviewing several years of graduates. A few programs indicated that 1990 was not representative of their past success in minority student recruitment and retention. This problem could be overcome by averaging minority participation over several years. Future studies in this area could be more selective in the types of recruitment and retention activities surveyed, eliminating those identified in this study as being implemented by all programs. Those activites implemented by all programs surveyed included the use of printed materials, such as brochures, and the use of current faculty and students for recruitment, the provision of academic counseling, and the monitoring of grade point averages. Future studies could examine just the few variables which this study indicated appeared related to high MESA and MESE. Future studies might also eliminate Asian students from the formulas used to compute the equity

scores.

Since several recruitment or retention activities, such as providing financial aid information to applicants or monitoring students' grade point averages, represent good educational practice, not necessarily just minority student activities, future studies could survey all physical therapy education programs, whether or not special efforts are made to recruit, admit or retain minority students. This would eliminate what is perhaps perceived as a stigma of being labeled as not making special efforts, while providing more data on what activities are related to success.

The American Physical Therapy Association has indicated a commitment to increasing minority representation in the profession. In the absence of more definitive findings, physical therapy educators must continue to use all efforts to ensure that they are actively pursuing this professional goal.

NURSING AND ALLIED HEALTH TECHNICAL EDUCATION IN EUROPE

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NOTE: This report was prepared by Catherine Bickle Junge in her private capacity. The views expressed are those of the author, and no official support by the U.S. Department of Education is intended or should be inferred.

ALSO NOTE: Catherine Bickle Junge died from injuries received from an automobile accident while on holiday following the Research Conference. This edition is dedicated in her memory.

NURSING AND ALLIED HEALTH TECHNICAL EDUCATION IN EUROPE

Catherine Bickle Junge[1]

INTRODUCTION

According to Linda Smith (1991), "the world is becoming a global marketplace and understanding and cooperation between the United States and [other countries] are replacing uncertainty and opposition." Smith , an instructor in nursing at Gateway Technical College, Kenosha, Wisconsin, established ties with her Russian counterparts. She found many similarities between nursing education in the United States (U.S.) and Russia. From this contact has come an international exchange program that has continued to build constructive and cooperative dialogue between nursing educators in the U.S. and the U.S.S.R. (the name at that time). This type of contact should be made between nursing and allied health educators in other European countries and the U.S.

It is important that nursing and allied health technical educators in the U.S. obtain information and establish contacts with their counterparts in other countries in order to work toward providing quality health care education in all parts of the world. Europe is a logical place to begin, since there is less of a problem with language. Most European educators can communicate in English, as well as their native language. For example, this writer participated in a People to People, Citizen Ambassador Program during August and September of 1990. As a part of this program, the delegates participated in a research conference in Budapest, Hungary, sponsored by the Workgroup of European Nurse Researchers (WENR). All of the presentations given during this conference were in English.

RESEARCH STUDIES ON NURSING AND ALLIED HEALTH EDUCATION IN EUROPE

At the time of this study there was little information in the U.S. literature about nursing and allied health education in Europe. Most of the research reports have been sponsored by the World

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Health Organization (WHO) and the Organization for Economic Cooperation and Development (OECD). OECD has sponsored several studies which are helpful in understanding nursing and allied health education in its member countries. Members of OECD include all western European countries, as well as Australia, Canada, United States, Japan, United Kingdom and Turkey.

A study of Organization and Scope of Research in Education for the Health Professions (1981), conducted by the WHO Regional Office for Europe, found a lack of interest in pursuing research in health manpower development (HMD).

> Research in HMD apparently has a low priority status in comparison with biomedical or clinical research. Future research in the education of health professionals will almost certainly require the contribution of health professionals. . .

The need for research in HMD was reiterated in 1977 by a World Health Assembly resolution stating that all citizens of the world deserve good health.

> . . . the main social target of governments and WHO in the coming decades should be the attainment by all the citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life.

The study emphasized the need for HMD research to reach the WHO goal.

> Health manpower represents the most costly resource in the provision of health care. Without health professionals responsive to the health care needs of the entire community and able to function effectively in health promotion, disease prevention, rehabilitation and curative care, the target of health for all by the year 2000 cannot be reached.

In addition to the emphasis and financial resources targeted to biomedical or clinical research the report lists other constraints on the development of HMD research studies.

> [There is] involvement of ministries, other than health, in the education of health care

personnel.

- Teachers in health sciences are not trained in educational theory and methods.
- Each health discipline tends to have its own degree of autonomy, educational culture and practices, besides its own body of knowledge, methods, professional values and norms. Educational research is likely to be viewed as a challenge to such autonomy.
- The status of paramedical professionals remains low in comparison with that of the medical profession and research money and efforts tend to accrue to high status areas.
- There is no international publication for HMD research. This results in isolation of researchers and lack of an outlet for publication of research studies. This makes it unattractive to many professionals.

The WHO Regional group was convinced of a pressing need for research in HMD, as a starting place for finding and implementing solutions to current health problems. Therefore the group strongly recommended to WHO Regional Offices and member States that action be taken to encourage research studies "necessary for effective and efficient education and training of health manpower."

An agency that has a vital interest in knowing about nursing education in countries other than the U.S. is the Commission on Graduates of Foreign Nursing Schools. The commission provides assistance, in fifty sites in other countries for graduates of foreign nursing schools to access the licensing system in the U.S. A telephone interview (1991) with Barbara Schaeffer, Director of Credential Services, indicated that there were no written references that described the various types of nursing programs in European countries. For making decisions on the eligibility of foreign trained nurses to take the licensure examination in one of the States, the Commission depends upon a specially trained staff's knowledge of the training/education nursing programs in specific countries.

During the Citizen Ambassador Program, the writer had several opportunities to interview nurses from several European countries and to learn "first hand" about nursing education in their

countries. This information is included later in this report. Since there was little information in the literature about the preparation of nurses and allied health workers at the technical level in Europe, a study of the various educational systems seemed in order.

EUROPEAN EDUCATION

There has been a great deal of interest in European and Japanese education during the education reform movement in the U.S. Several studies have described the apprenticeship and other educational programs in Germany. Rick L. Perry (1991) visited three vocational schools and a full time apprenticeship program in Germany in 1990. The schools offered vocational subjects related to the employment needs of the community. Graduation from a middle or secondary school was required for admission. Each school had a curriculum of core academic subjects in addition to occupational courses. They offered the German dual system of classroom and work site education and had working ties with local businesses. One of the schools, which specialized in social work and domestic subjects, was predominantly women. The course of study in this school was two years, with the first year devoted to class work at school and the second year included a weekly schedule of 13 hours of school and 27 hours with the employer. In the other two schools students divided their time between learning skills from the employer and taking basic theoretical courses. The theoretical courses included: religion, geography, economics and computer science. Perry also described the basic structure of German schools.

> In Germany compulsory public education begins at age six and continues for 9-12 years with the possibility of an additional three years of vocational schooling. After grundschule (elementary school, grades 1-4), students choose one of three options.
>
> - Hauptschule, a middle school, grades 5-9, with the probability of continuing study at a vocational school for three years beyond the ninth grade
> - Ralschule, middle/secondary school, grades 5-10, where students prepare for mid-level, non-professional careers.
> - Gymnasium, middle/secondary school, grades 5-13, where the focus is on preparing for higher

education [university study]

The Germans say that by age 10 it can be determined if a student is inclined to do well in theoretical classes such as math, science and language. And parents and teachers can decide which of three schools the student will continue with. It is important to note that when students take part in the dual system, they still must take a core of theoretical courses, such as German, math, science, history, geography and a foreign language. This is a tougher regimen than that required in virtually any American high school.

Students may always choose to move up or down the education system ladder. There is never a dead end.

A study of The Dual System of Vocational Education in the Federal Republic of Germany--Principles and Experience (1988) describes the cooperative arrangements between the schools and industry to prepare students to enter the world of work. Characteristics of German vocational education in this study include those listed below.

- The State recognizes vocational education training programs.
- The dual system involves three days in the work site and two or three days in the classroom.

Financing is primarily the responsibility of the business/industries needing the trained workers. Public funds, both Federal and Lander (State), provide for classroom buildings and equipment. In addition Federal and State governments provide financial assistance for students who are not prepared to successfully complete the traineeships.

A report prepared by the Federal Ministry of Education and Science, Federal Republic of Germany (1987), Numerical Barometer, A Survey of Education Statistics, provides statistical information about education for health care workers in Germany. The report indicates that education in "health schools" begins after the secondary level, stage 11, at ages 14-15 and progresses to age 22 or the tertiary level. There is no indication of which health occupations areas are involved in training at the "health schools."

One statistical study found that, of the total number of students enrolled in tertiary education in 1985, there were seven percent in medicine, dentistry and veterinary science. A listing of apprenticeships in the 15 most acquired occupations in 1985 indicated that of the total number of females, 5.2 percent were enrolled in "doctor's receptionist" and 4.0 percent were enrolled in "dentist's receptionist."

Studies of education programs in other European countries indicate a similar structure. Following primary education, which differs in length from 4 to 9 years, students are sent to middle or secondary schools in relationship to their perceived occupational or career goals. Between 25 and 30 percent go to a gymnasium or athenaeum which prepares them for entry into the university. University education is focused on research, not applied education or training. Special schools in higher education or level three prepare professionals for specific occupations such as: engineering, medicine, dentistry or pharmacy. (See Table 1 for a comparison of primary and secondary education in seven European countries.)

A report on Education and Training After Basic Schooling, sponsored by OECD, 1985, found a rapid increase during the past two decades in the demand for education and training courses provided immediately after compulsory schooling. Reasons for this included: rising living standards, educational aspirations, demands of the economy for higher qualifications and during the past few years, the difficult employment situation facing young people. The report examined the different policies adopted by countries in their attempts to provide a wide range of formal and non-formal education and training opportunities at the post compulsory secondary level for the bulk of the 16-19 year olds.

The report concluded that studying one or two years beyond basic compulsory schooling or the statutory leaving age is now becoming the norm in a growing number of Western industrialized countries and is already the established pattern in the United States and Japan. There has also been an increase in programs that combine education training with work experience.

In examining the different ways in which the OECD countries are coping with the expansion and diversification of post compulsory education and training, the report draws attention to the

Table 1

Comparison of Primary and Secondary Education in Seven European Countries

Country	Begins	Primary Education	Secondary Education
Germany	6 yrs.	6 years	Hauptschule, job training Realschule, technical education Gymnasium, university entry
Hungary	7 yrs.	8 years	Specialized high schools Maturity Exam-18 years
Czecho-slovakia	6-7 yrs.	9 years	Vocational schools - 4 years Gymnasium - 4 years Maturity Exam - 19 years
Croatia, Yugo-slavia	7 yrs.	8 years	Vocational schools-4 years Gymnasium - 4 years
Austria	6 yrs.	4 years	General skills, vocational - 5 years Gymnasium - 8 years Nursing at 16 years of age
Finland	7 yrs.	9 years	Gymnasium - 3 years (qualifies for university) Vocational - 2 1/2-4 1/2 years, e.g. nursing, carpentry, electricity
Portugal	6 yrs.	6 years	General, science, math, physics - 3 years Options (age 16) - health, crafts, science University entry by general examination (licencia ura)

complexity and diversity of the prevailing arrangement. Three quite clearly distinct policy approaches, models or provisions were identified.

- The schooling model aims at integrating most, if not all, forms of provisions after compulsory education within the formal system, favoring schooling on a full-time basis for the majority of the age group--as in Japan, the United States, Sweden, Belgium and Finland.
- The dual model, prevalent in Austria, Germany and Switzerland is characterized by the

presence of a strong and highly developed apprenticeship sector, organized and administered separately from full time upper secondary schools but considered as an integral part of the formal system of initial education and training.

The "mixed" model is best exemplified by the United Kingdom, in which the main feature is the greater importance assigned to training outside the formal education system and outside the scope and control of education authorities.

According to this report, increasing the offerings at the tertiary level depends on the rigidity of the boundaries between secondary and higher education, which at the time of the study, seemed far stronger in European countries than in the United States. It is possible that in the near future many European countries will be under strong pressure to develop post-compulsory, "tertiary," "further education," or community type colleges that straddle both levels of education, provide for greater flexibility and have a stronger "consumer" orientation.

A study of education in The Netherlands was sponsored by OECD (1989), Richness of the Uncompleted--Challenges Facing Dutch Education. The study examined the questions of how to structure education for pupils aged 12-16 and curriculum innovations. According to the study, curriculum innovations should make adjustments to today's requirements and reducing the number of young people who leave school without qualifications. The study described the Dutch system of education.

Dating from the 1919 Occupational Education Act, secondary school systems distinguished between general and vocational education. After that time, vocational education was available at both junior and senior secondary levels. The first year following primary school was considered a transition year which bridged the gap between primary and secondary education and linked various types of secondary schools. There were two types of transition classes, one for general and one for vocational education. A debate was continuing at the time of the study on structural changes needed in the education system. Several proposals called for a common curriculum in the first three years of secondary school, enabling students to postpone the final choice of subjects, provide individual

development and provide a broader education. The core curriculum, to fill 80 percent of the schooling time would include: Dutch, English, French or German; mathematics; physics and chemistry; biology; computer and information literacy; technology; history and civics; geography; economics; visual arts; music; and, physical education.

Other proposed changes in secondary vocational education are listed below.

- There should be more involvement of employer organizations, trade unions and industry in developing curriculum.
- Schools should have more control over finances, staff and organization of teaching.
- Schools should have at least 500 pupils on the rolls.
- Schools should be divided into four sectors: engineering, agriculture, economics and personal and social services and health care.
- Each school should provide both short and long courses.

There were two systems providing tertiary education: the universities and higher vocational education. The universities operated on a two tier system. The first phase, the degree course, lasting four years and the second phase for a small number of postgraduate students. Vocational education has come to be regarded as a form of higher education. Since 1986, colleges of higher vocational education have provided several courses at this level, called hogescholen. Postgraduate vocational courses (beyond the four years) are required for doctors, veterinary surgeons, dentists and pharmacists.

A report to OECD (1988), Reviews of National Policies For Education, Norway, provided information on vocational education programs. Vocational and apprenticeship training took place partly in upper secondary (grades 10,11,12) and partly in the world of work. The choice of vocational training was wide, covering around 170 vocations.

The Royal Ministry of Cultural and Scientific Affairs, Royal Ministry of Church and Education stressed the importance of introducing training for new vocations, especially vocations concerning

welfare, health and social work. It was considered vital for Norwegian industry to facilitate further education based on vocational training.

A report on Development of Education in the Czechoslovak-Socialist Republic, 1986-88 indicated that secondary schools provided three tracts: gymnasia, preparation for the university, grades 9-12; vocational secondary, including schools for health workers; and, secondary apprentice, training centres and branches of study. The schools for health workers are managed by the Ministry of Health.

> The numbers of schools, classes and students are based on the demand for health service to the inhabitants, on the necessities of health facilities for both visiting and hospitalized patients and on the necessities resulting from the care of elderly people.

A table, page 139, indicated that in 1984-85 there were 77 schools, 954 classes, 2,154 teachers and 29,778 pupils.

A report was given to the 41st Session of the International Conference on Education, Budapest (1988) on Development of Education in Hungary, 1986-88. The report indicated that the present day structure of Hungarian education was laid down in the Education Act of 1985. In accordance with this law, the basic institutions of public education are listed below.

Nursery school - begins at age three

Primary level educational institutions - 8 grades

Secondary level educational institutions

- grammar schools, 4 grades, prerequisite to applying to higher education vocational secondary schools, 4-5 grades, for technician and further study in specialized areas
- skilled worker training schools
- vocational schools, 3 grades, providing vocational training in 128 trades (Successful passage of an examination provides a certificate.)

. special vocational schools - a three year school provides health care training (In 1986-87 5,279 students studied in 24 health schools.)

A difficulty noted in the report was the small number of students who qualified for study at the university in higher education.

Information gained by the writer from individuals during the Citizen Ambassador Program indicated a similar pattern in Czechoslovakia, Hungary, Austria, Finland, Portugal and Yugoslavia. Following primary education, 6-9 years, students were sent to either a gymnasia, for university preparation, or to specialized vocational secondary schools. Hungary and Czechoslovakia require students to take a maturity examination after the completion of their secondary education program.

A study of Education in OECD Countries, 1984-85: Comparative Statistics describes the difference between education programs in the majority of the member countries and other member countries.

> In the majority of countries second level, second stage education is split into general education and vocational/technical education. These two types can be further subdivided into "terminal" education and education in preparation for third level studies . . .
>
> The U.S.A., Canada and Australia are countries where enrollment in secondary education cannot be broken down into general education and vocational/technical education.

In the majority of OECD member countries the selection process for students to pursue tertiary education (college level) is made during second level education. In Canada, U.S.A. and Japan, where 75 percent of the age group obtain a secondary certificate but where the difference between this group and those going on to tertiary education is substantial. Selection in these countries takes place at entry into higher education. (See Table 2 for a comparison of enrollment rates of individuals, ages 15-19.)

A study was made of the preparation of vocational and technical workers in Sweden, England, Germany, and Japan, Training Strategies: Preparing Noncollege Youth for Employment in the U.S. and Foreign Counties, by the General Accounting Office (GAO), 1990. The GAO study found that the four countries selected for review have national policies aimed at effective employment preparation of

Table 2

Enrollment Rates for Individuals, Ages 17-19 in Six Countries

	% of 17 year olds	% of 18 year olds	% of 19 year olds
USA	87.7	57.25	42.56
UK	46.29	30.88	23.21
Germany	46.07	45.7	29.78
Belgium	81.66	64.78	50.82
Norway	75.73	61.7	32.62
Canada	75.91	51.2	37.22

noncollege youth. Underlying these policies is the belief that a well prepared you work force is vital for national economic growth and international competitiveness.

The study identified several significant approaches that were shared by some or all of the four countries and appeared relevant to shortcomings on the U.S. strategy for noncollege youth. The authors caution that there are different institutions and cultural values that prevent total acceptance of these educational models. Also, some of these foreign practices have problems of their own and are under continuous discussion in their own countries. Four approaches are described below.

1. Schools emphasize student effort rather than ability and, therefore, expect all students to attain the academic skills necessary to perform effectively in postsecondary education or the work place. The schools do not take it as a matter of course that many students will lag behind.
2. Schools and the employment community play a more active role in guiding the transition from school to work, including an orientation to the world of work built into the school curriculum.
3. Training is accompanied by certification of achievement of competency on nationally determined skill levels.
4. Governments make extensive investment in remedial education, training or job placement for

jobless out-of school youth.

The inference from studying these reports from various European countries was that preparation for nursing and allied health occupations takes place at the secondary level, second stage of education in specific vocational schools. This inference was confirmed as further study was made of nursing and allied health preparation in specific countries.

NURSING EDUCATION IN EUROPE

The information in this section of the research study is based primarily on personal interviews with health care educators in Europe and the U.S. One report, "Education of Nurses in Croatia," was presented during a conference in Zabreb with Yugoslavian and U.S. nurses during the Citizen Ambassador Program. Brief descriptions of nursing and allied health education in individual countries will be given, followed by several general observations by the writer and by Barbara Schaeffer from the Commission on Graduates of Foreign Nursing Schools.

Czechoslovakia

Basic education begins at age six and lasts for nine years. Students take a "maturity examination" at the end of the nine years. A four year college (secondary) experience leads to qualifying for the university. Basic nursing education begins in special schools at 15-16 years of age, following the nine years of basic education and lasts for three years. The nursing program involves academic courses, including foreign languages and other general education courses, similar to the core courses listed for Dutch schools. p. 10.

Education in a gymnasia was preparation for university entry to study medicine, dentistry, law and pedagogy/education. Post graduate programs were available for nurses--one every three months, including two weeks of schooling. A diploma was awarded upon completion of the post graduate program.

The Citizen Ambassador delegation visited the III Internal Clinic which was a part of Charles University in Prague. Nursing education classes, taught by a doctor, began at Charles University

hospitals 30 years ago. The first lectures were given in the auditorium where the delegates met with nurses from Prague and other regions of Czechoslovakia.

At the time of the delegation visit there were three types of nursing education: basic, midwifery and children's (pediatric) nurse. All involved a combination of theory and nursing skill development. The basic nursing education was at the secondary level.

University education for nurses, begun in 1960, involved nursing teachers, scientific study and served to upgrade high school nurses. Nurses with practical experience were preferred to enter into the university program. In 1980 university nursing education was part time. In 1990 a full time program was offered. Studies included: teaching methods, lecture, seminar; basic subjects, philosophy, foreign language; nursing subjects, pedagogical studies; and, preparatory subjects. Employment for university nursing graduates was available in nursing education, nursing administration and the ministry of health.

A few adult nursing education programs were beginning to be organized. Helping nurses (nursing assistants) received six month training.

Post basic specialty program available for nurses included: adults, anesthesia, emergency, psychiatry, health education, stomatology and nuclear medicine. Nurses could also specialize in organization and management.

Portugal

Primary education in Portugal begins at age six (kindergarten is optional) and continues for six years. Secondary education consists of three years of general education, i.e. science, math and languages, with options after two years. Some of the options are listed below.

Health - dentistry, nursing, medicine

Crafts - arts, painting, music

Science - physics, chemistry, biology

Entry into the university is obtained after two years of study in a college (secondary). Students take a general education examination to qualify for entry into the university (licencia ura). University

education qualifies a person for graduate education. Occupations available at this level include: social work, medicine, pharmacy and dentistry.

Entrance requirements for nursing school include: a written entrance examination, other special tests and a physical examination. The school is for three years and provides the equivalent of a baccalaureate degree.

Education for health technicians has a lower status than education for nurses, e.g. physical therapists, speech therapists, laboratory technicians and radiographers. Hospital auxiliary workers are trained through three months of on-the-job training.

Croatia, Yugoslavia

Upon completion of compulsory elementary school, about the age of 16, student could choose one of the two basic types of four year high schools:

- gymnasium - schools where students were prepared to continue their education at the university level and were free to choose education programs with prevalent biological, humanistic or technical subjects, depending upon their own preferences;
- vocational school - schools where general education subjects took 50 percent of the time and the remainer of the time was given to professional profiles providing training for certain occupations, e.g. nurse, technician, but which also enabled the students to continue their education at a college or university level.

After graduation from high school, persons could continue their education in college (two years) or university (four years). Some studies, such as, medicine, architectural and engineering took five years. It should be noted however, that only upon graduation from the university was it possible to continue with postgraduate studies, either to become a specialist or to acquire higher academic degrees, such as master's or doctoral degrees in either science or arts.

Basic nursing education was four years of secondary education and two years of advanced education for teaching or administration. Nurses did not learn to write "nurse's notes." Nurses recorded in special books: admissions, treatments, medications given and narcotics. Verbal reports

were given to the doctors who made notations on the patient's chart. A report given later, at a special conference, indicated that certain terms were "owned" by physicians, including, "diagnosis" and "amamnesis."

Several of the Citizen Ambassador delegates were able to visit a combination retirement center/nursing home. The home was administered by a social worker. Staffing included: doctors, nurses, physical therapists, nursing assistants, cleaners and cooks. Training for the nursing assistants took place in Zagreb. The training began after the 8th grade and was a six months course. Assistants could begin work when about 15 years of age.

East Berlin

The Citizen Ambassador delegation visited the Charity Hospital, founded in 1710. The hospital was heavily damaged during World War II. Since being rebuilt in 1976, the hospital contained 2,000 beds and served 1,000,000 outpatients per year, performed 40,000 operations and provided services for 5,700 elderly. The staff included 1,100 doctors and 2,400 nurses. Education programs included: medicine, dentistry, diploma nursing, medical pedagogy and dental technicians. The hospital was a part of Humboldt University.

The hospital housed a High School for Hygiene and Public Health. Specialized training for nurses was available at Charity Hospital in dialysis, anesthesia, intensive care, neurology/psychiatry, surgery, nursing administration, transfusions/intravenous, public (health) nursing, medical pedagogy and nurse officer (nursing administration). Midwifery, psychiatric and children's nurse were separate programs apart from the general nursing education program.

Clinical teaching of student nurses was done by a medical/nurse pedagogue team and included health care theory in the classroom with mentors on the nursing units teaching the nursing skills. At the time of the visit the nursing program was three years, alternating three weeks of theory with three weeks of nursing practice. The last six months were practice only and preparation for the examination. In the past nursing education included nutrition and cooking. A male nurse reported that his nursing education program included industrial arts so that he could make repairs on electrical appliances in the

hospital. In 1982 nursing education was moved into higher education and persons completing the program could advance to earn the title of "Doctor."

Hungary

During the visit of the Citizen Ambassador delegation to Budapest, Hungary, we had an opportunity to visit the Institute of Health Studies in Budapest. The Institute sets the theoretical base for health education in Hungary. There were 66 nursing high schools in Hungary with eight regional institutes supervised by a regional director. In addition to the basic nursing programs, post graduate courses were offered to nurses in: intensive care, anesthesia, operating room, pediatrics, dialysis, laboratory assistant and nursing history.

The Central Institute was staffed by the director, her assistants and 42 instructors. The instructors were nurses of the highest level in Hungary. The Institute Director (previously a doctor) compiled statistics for all registered and unregistered health care workers in Hungary. The Chief Nurse gave the delegation an overview of the health needs in Hungary.

There was a National Institute of Health headed by the Ministry of Health. There was a relatively good primary health care system with 5,000 district nurses and 6,000 health visitors. There were not enough nurses nor social workers to give the needed care. There were many out-patient clinics and "town level" hospitals in 19 counties. There were also numerous sanitariums featuring mineral water baths.

There were no more nuns in nursing after 1945. There were two Hungarian nurses who had doctoral degrees. According to the Chief Nurse, the education level for nurses was too low--at the secondary level. The secondary general nursing education programs, as well as general nursing assistants were regulated by the State. Inservice programs were needed for staff nurses.

The current system of nurse assignment was task centered. Nursing leaders were working toward patient centered programs. There was no nursing documentation in Hungary. There were 36,000 doctors and 60,000 health workers. The ratio of doctors to nurses was 1:3.5

Mental health treatment with psychiatric nurses was out-dated. Psychiatry had only been

taught in nursing schools for the previous four years. There were 130,000 health workers in mental health including 3,000 psychiatric nurses. There was a need for 200 additional psychiatric nurses.

I had an opportunity to visit the Southern Pesch Hospital along with other conferees from the WENR Conference. The chief nurse at the hospital had arranged for us to visit three areas: pre-natal, obstetrics and delivery room; blood bank; and, the critical care units and sterilization area. None of the conferees were interested in visiting the blood bank. I went with the group that toured the critical care units and sterilization area.

The intensive care unit and surgical recovery unit were a combined unit. There were 12 beds in the medical intensive care section with four doctors and four nurses covering a 24 hour day. Nurses and doctors worked 12 hour shifts and a 40 hour week. In Hungary 39 percent of the deaths were due to cardio-vascular conditions. Patients admitted with myocardial infarction stayed an average of four to six days in the intensive care unit and then two weeks in another nursing unit.

The surgical intensive care unit was divided according to the type of operation. Laboratory tests were done on the unit by nurses who had special training including, complete blood counts, blood gases and blood sugars.

The group visited a nursing unit for urology patients. All rooms for adults had five to six beds. Laboratory tests were performed on the unit in the nurses' station. Patients were admitted to the hospital through out-patient clinics operated by the hospital. Staffing for a 38 bed patient unit was 17 nurses for 24 hours. Nurses in these units worked eight hour shifts, 40 hours per week. We visited the clinical laboratory which was directed by a doctor and staffed by nurses with special training. The nurses performed blood chemistries, serology and histology. The laboratory served the out-patient clinics as well as the hospital.

Radiographs were performed by technicians who were trained in special schools. Nurses who specialize in anesthesia assisted the anesthesiologist.

The sterilization center served the Southern Pesch Hospital and other hospitals in the geographic area. The unit, supervised by a chief nurse and several assistants, was staffed by nurses.

Dirty instruments, including surgical instruments, came in one side of the unit and exited through the other side.

The pediatric units, three, accommodated new borns, infants and small children. There were five to eight cribs to each room. Parents were allowed to visit for one hour each day and two hours on Sunday. Staffing included one doctor and one psychologist in addition to the nurses.

Oncology patients were assigned 20 beds in a 120 bed unit. Nurses working with chemotherapy took special precautions. There was a psychologist on the unit staff. Terminally ill patients were required to be in the hospital for their final care. Rooms in the special unit had two beds to a room with one nurse assigned to each room. There were no hospice institutions in the region.

Descriptions of hospital nursing practices were included in this report. Prevelant nursing practice indicated the experiences that must be included in the curriculum in order to prepare students to practice in their country's health care institutions.

ALLIED HEALTH EDUCATION IN EUROPE

Several pages in the report have referred to health care workers other than nurses. In general there appeared to be few specific training programs for allied health workers. The secondary health science programs apparently provide the opportunity for all completers to become registered nurses. As noted earlier, some of these nurses could then specialize in areas which are classified as "allied health" in the U.S. The only group which appeared to always have separate training programs were radiographers.

At Charity Hospital in Berlin the training program for radiographers had been two years in length but was increasing to three years. The hospital provided special training for physical therapy technicians and laboratory technicians.

The conclusions stated above were checked during the telephone interview with Barbara Schaeffer. She stated that the education/training of nurses in Europe differed so much from one country to another that it was difficult to make broad statements that would fit all countries. She did agree to the statemenst below about the trends in European nursing education.

In the past most European nursing education programs were conducted at the secondary level. As noted earlier, general education programs in Great Britain and other European countries provided at least two tracts for students: an academic tract leading to admission to the university and a vocational tract providing specific job training, as well as academic courses. There were second stage secondary or college possibilities following either of the two major tracts. Nurses in many European countries are trying to upgrade the education program for nurses. (See details on nursing education in Croatia.)

In the countries which I visited with the Citizen Ambassador Program the nursing programs were conducted in special vocational/technical health science secondary schools. There were few allied health technical education programs. In many countries graduates of the basic nursing program could specialize at the post basic level in physical therapy, central service, surgery, medical laboratory or anesthesia.

Traditionally, nursing schools in Great Britain and several other European countries have specialized at the basic level. In addition to programs for general nurses specialized training has been provided for public health nurses, midwives, mental health nurses and children's nurses. A Project 2000 for nurses in Great Britain will include a general nursing curriculum of eighteen months, followed by eighteen months of curricula in special areas. Post basic nursing programs will provide college level courses.

The retention rate for nurses and allied health workers is low, around 50 percent. One possible reason for the high "drop out" rate is the early age at which many of the students enter the basic health care education programs. Many of the students enter nursing programs without first completing a basic secondary education.

A problem for nurses in Europe who desire employment as registered nurses in the U.S. is that they were trained as nursing specialists but have been working as general nurses without going through the general nursing education program.

CONCLUSION AND RECOMMENDATIONS

There are many difficulties in comparing education programs for nurses and allied health workers in the U.S. and in Europe. The first difficulty is the differences in the basic education programs in the U.S. and most European countries. Another difficulty is that secondary education in most European countries is divided into separate schools for specific purposes or according to ability levels. In the U.S. all secondary education students in public education attend the same educational institutions.

There are also differences in terminology definitions. In the U.S. the terms "college" and "university" are almost always used interchangeably. In most European countries the term "college" refers to a late secondary or early tertiary educational institution and the term "university" refers to an institution where the emphasis is on research and not applied academic programs. In the U.S. higher education, as well as secondary education tends to be heterogeneous, attempting to provide "all things to all students."

It is clearly evident that more research is needed in the area of human resource development of health care providers. The WHO study in 1981 noting a sparsity of research studies in this area is as true in 1991 as it was when the study was done ten years ago. Other recommendations are listed below.

- There needs to be more contact between nurses and allied health educators in the U.S. and Europe such as the communication set up by Linda Smith between the nursing education program at Gateway Technical College and its Russian counterparts.
- Other Citizen Ambassador Programs with the emphasis on nursing and allied health education would be immensely beneficial.
- Participation of U.S. nursing educators in conferences such as the one sponsored by the Workgroup of European Nurse Researchers would continue to stimulate helpful dialogue.

A start has been made with the activities listed above. Hopefully, other educators will be

stimulated to follow the examples set before them. Or, perhaps break new ground by beginning a new and different type of exchange or communication program. The field is wide open and waiting for innovative educators on both sides of the Atlantic to get "into the swim" of communicating ideas and exchanging information on the best ways for the basic and continuing education of nursing and allied health workers.

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